THE ECOLOGICAL FOOTPRINT OF HOSTEL TOURISTS IN ONTARIO AND QUEBEC

by

Claire Lynne Purvis

A thesis

presented to the University of Waterloo

in fulfillment of the

thesis requirement for the degree of

Master of Applied Environmental Studies

In

Geography - Tourism Policy and Planning

Waterloo, Ontario, Canada, 2008

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Claire Purvis

Abstract

In recent years, the impacts of the tourism industry on the environment have become widely acknowledged. As tourism is predicted to continue growing in the next decade, there is an urgent need for the tourism sector to embrace sustainability principles in order that tourists may continue travelling, while placing minimal impacts on the natural environment. Although there is much debate over the concepts of sustainability and how it is to be measured, the Ecological Footprint has recently been proposed as a key indicator of sustainable tourism, due to its abilities to quantify the amount of land needed for tourism activities, and enable comparisons between tourism components through its global, standardized measurements.

In this study, the ecological footprint was adapted to a tourism context, in order to measure the sustainability of backpacker tourism. As backpackers, or hostel tourists, tend to travel on low budgets and use fewer resources than the average tourist, it has been speculated that backpacker tourism is more environmentally friendly than some other forms of travel. This study was therefore conducted in an attempt to determine the validity of this belief. For the purpose of the study, surveys were conducted with 123 backpackers and hostel tourists staying at 8 hostels located throughout Ontario and Quebec. Information was collected on respondents' food, activity and transportation behaviours. In addition, hostels were requested to provide information on accommodation aspects such as occupancy rates, property sizes and energy usage, in addition to waste management routines and information. This data was inputted into the ecological footprint calculator to determine the average ecological footprints of backpacker tourists in Ontario and Quebec, and the relationship between the ecological footprint, demographics and travelling behaviours. In addition to the data collected for ecological footprint calculations, information was also requested from hostels and respondents on the frequency of their environmental behaviours and their general level of environmental concern. The analysis of this information provided an indication of the current 'green status' of backpacker tourism and where improvements could be made in environmental practices.

The findings of this study indicate that backpacker tourism is substantially more sustainable than some other forms of international travel. However, it was also found that backpacker tourism, according to ecological footprint concepts, was not sustainable as an activity, since the average footprint was substantially more than the fair earth share value; a number considered to be the sustainable baseline. In addition, backpacker ecological footprints were generally considerably higher than the average footprints generated by residents in respondents' home countries. Through individually analyzing the tourism components, this study determined that transportation accounted for the largest average contribution (77%) to respondents' ecological footprints. As most backpackers were international travellers, the transportation impacts were often a result of flight emissions and although this study inquired into sustainable flight options, it is clear that there is currently no perfect solution for decreasing flight impacts. As a result, reducing the ecological footprint of backpacker tourism to a sustainable level currently appears to be for the most part, impossible.

This study acknowledged that ceasing international tourism due to its environmental impacts would be unrealistic and certainly damaging to countries and areas that rely heavily on backpacker, or general tourism revenues. As such, the study concludes with several policy recommendations for those involved in backpacker tourism, which may increase the sustainability of ecological footprint components. Since money and time were considered to be a major barrier in incorporating environmental initiatives into hostel practices, the recommendations are relatively low maintenance and require little financial investment. Although their implementation alone will not decrease backpacker ecological footprints by a substantial amount, they will at least contribute to the increased environmental sustainability of backpacker tourism.

Acknowledgements

For most of my teenage years, my father attempted to persuade me that I needed a Master's Degree to get somewhere in today's world. I, on the other hand, was not so convinced and I remember vowing to him at my undergraduate convocation that I was never returning to school. Yet somehow, a year later, after returning from 6 months of backpacking, there I was, impulsively applying to grad school. At the time, it seemed the obvious answer to the inevitable question of "what do I do now?" and I think this hasty decision was simply a way of avoiding all those confusing life decisions. However, looking back now, I certainly have no regrets. My theory is that if you need to waste a bit more time to figure out what to do with your life, you might as well make it productive and education is always a good option.

The 2 years has actually flown by and although requiring hard work and determination, they have been far more enjoyable than I ever anticipated. The idea of a thesis used to terrify me, but with the help of many people, it was simplified and almost made to look easy. Firstly, thanks to Dr. Judie Cukier, my advisor, for the many answers to my never-ending questions, for an excellent and helpful tourism seminar class, and for making the thesis process seem relatively uncomplicated. Thank you to Dr. Paul Parker, my committee member, for his expertise on the ecological footprint. I had no idea how complex it really was when I started, but thankfully Paul was knowledgeable on the subject and made it seem simple and easy to grasp. Thank you to all the survey respondents and the hostel owners/managers who took part in the study. Your interest, encouragement and ideas were a huge help and without your assistance, this thesis would not have been possible.

Most of all, I thank my parents for their support, advice and encouragement and for being great listeners. I'm sure they too questioned the hastiness of my grad school decision but they stood behind me all the way and best of all, allowed me to live at home rent-free during the process. Thanks to my mom for the ideas, letting me vent when I'd had a bad day, and for accompanying me to some of the hostels. With her alongside, the visits became sightseeing adventures with some surveys done on the side. Thanks to my dad for his advice, ideas, proof-reading skills and for never pushing me, but always asking how it was coming, just to keep me on my toes. Thanks also to Lara and Dave who, although far away, remained supportive and were always interested in how the study was going.

A huge thank you goes out to Sean Bush, who stood by me during this whole process. He was a great listener and always appeared interested in our thesis conversations when he probably had no idea what I was actually trying to explain. He sent me information that he thought I'd find useful, he gave me a shoulder to cry on during the bad days, and he was always happy to hear from me at work even when it involved nothing more than a vent about my latest obstacle. You're up next buddy, and I'll make sure to be there for you as much as you have for me.

And last, but not least, I can't finish without mentioning my greatest fan, who quietly lay by my feet for the past 2 years. Kita, my wonderful German shepherd, was a fantastic listener, a great shadow, and she always appeared interested in 'our' thesis conversations. Our daily hikes or barn excursions were an excellent source of therapy, and gave me time to reflect and clear my head. She made fun and enjoyable, what could have been a pretty lonely and tedious process.

So here I am now, back to that ultimate question of "what do I do now?" I pretty sure that the more education you receive, the more career options you discover and the more confused you actually become about your purpose in life. This time round I'm going to sit and wait and I'm sure it'll come to me… and if it doesn't and I feel a need to avoid the decision for a bit longer while being productive, well there's always a PhD or MBA with my name all over it .

Table of Contents

List of Tables

List of Charts

Chapter One

1. INTRODUCTION

Global warming and biodiversity loss have become frequent topics for discussion in recent years as the effects of human life on the environment have been discovered and better understood. According to the World Wildlife Fund [WWF] (2006), current levels of consumerism, population increase and economic growth could cause human demand on the environment in 2050 to be twice the biosphere's productive capacity, indicating that human beings are exploiting environmental resources faster than they can be regenerated. As a result, there is an urgent worldwide need to research and develop more sustainable ways of living and conducting business, whereby current activities can be curtailed at more manageable levels for the environment. The ultimate goal, as presented in the Bruntland Report (World Commission on the Environment and Development [WCED], 1987), is to sustain development at a level that will allow present and future generations to meet their needs. In basic terms, a sustainable world would enable individuals equal opportunity to obtain life necessities while ensuring that the natural environment is preserved for future generations not only aesthetically, but for economic and social reasons as well.

Recently, with the introduction of Kyoto Protocol targets, there has been a continuous search for more environmentally friendly ways of living. Individuals and businesses are being encouraged to better regulate their energy usage, utilize eco-friendly modes of transportation, reduce greenhouse emissions, and decrease levels of consumerism and waste generation. Although in the past, households and businesses have been the target for sustainable living campaigns, it has recently been realized that the tourism industry, through its accommodation, food, transportation and activity components, also places considerable negative impacts on the environment (Neto, 2003; Welford, Ytterhus & Eligh, 1999; Gossling, 2000; Bohler, Grischkat, Haustein & Hunecke, 2006). Since the World Tourism Organization (2005) states that tourism numbers will increase substantially in the next decade, these impacts indicate an urgent need to introduce sustainability concepts into tourism activities. The problem lies in the fact that although there has been much research on the impacts of tourists, the sustainability of tourism is a decidedly difficult area to measure given tourism's complexity and variation. However, recently progress has enabled the ecological footprint tool to be proposed as an indicator for measuring

sustainable tourism, due to its abilities to quantify the amount of land needed for tourism activities, and enable comparisons between tourism sectors.

As tourists can make individual decisions regarding where to travel, how to get there, and what activities to take part in, it could be expected that tourism impacts will vary according to these preferences. As such, each type of tourism will have slightly different ecological requirements, with local tourists staying at a nearby campground requiring fewer resources during their holiday than those taking part in long-haul flights and staying in five star resorts. In particular, it has been suggested by Scheyvens (2002) that backpacker tourism may be more environmentally friendly than some other tourism sectors. These tourists tend to travel on tight budgets, use local resources and hostel accommodations, and often travel intra-regionally by themselves or with a flexible social group. Backpackers also enjoy immersing themselves in a country's culture, and being active participants in sightseeing activities (Loker-Murphy and Pearce, 1995; Sorensen, 2003). Since these tourists generally require fewer amenities than perhaps resort-style or hotel guests, they could be considered low maintenance with regards to their resource requirements, and therefore relatively environmentally friendly (Scheyvens, 2002). However, it appears that the sustainability of backpacker tourism has yet to be measured, and therefore the suggestion that they are eco-friendly tourists remains speculative.

1.1 Research Problem and Purpose Statement

The ecological footprint is a relatively new concept, and it appears that only a few studies have used this tool to measure tourism impacts; two of which involved sun-seeking tourists on package holidays (Gossling, 2002; the World Wildlife Fund-UK, 2002) and one which focused on ecological footprint differences between tourists and a host population (Patterson, Niccolucci & Bastianoni, 2007). As such, limited research has been completed on the ecological footprint as it relates to tourism sustainability. In particular, it appears that no studies have attempted to use the ecological footprint tool to test Scheyven's (2002) speculation that backpackers are relatively environmentally friendly tourists. Therefore, the purpose of this research is to quantify the ecological resource requirements of backpacker tourism to determine if they are in fact eco-friendly travelers. In addition, this study will attempt to discover the environmental impacts of different tourism components in the backpacker sector and determine whether the sustainability of backpacker tourism can be further increased.

Several implications could result from the information found in this study. Firstly, if this study proves that backpackers are environmentally friendly tourists, and as it has been discovered that they can

contribute significantly to tourism economies, (Wilson, 1997; Hampton, 1998; Goodwin et al.; Wheeler; Haigh as cited in Scheyvens, 2002; Loker-Murphy and Pearce, 1995), the backpacker market could be further targeted in marketing campaigns, to increase tourist numbers while minimizing environmental impacts. Secondly, the socio-demographic information gathered on backpackers could enable tourism companies to be better informed on this market, and thereby possibly more effective in their marketing initiatives. Thirdly, hostels may be able to use these data to increase their environmental sustainability and to educate their guests on the impacts of backpacker travel and ways in which these impacts can be reduced. Lastly, this study will attempt to further the knowledge and literature on ecological footprinting in a tourism context.

1.2 Goal, Research Questions and Objectives

The goal of this study is to quantify and evaluate the ecological resource requirements of backpacker tourism in Ontario and Quebec through the use of the ecological footprint tool. The study will specifically focus on backpacker accommodation, activities, transportation, food and waste. In order to gain direction towards obtaining this goal, six individual research questions are listed below.

1) What are the socio-demographics and behavioural characteristics of backpackers in Ontario and Quebec?
2) What is the average backpacker ecological footprint, and what is the range of footprints found in Ontario and Quebec?
3) How do backpacker ecological footprints compare to the Fair Earth Share, other tourism sectors and those of their home countries?
4) What is the ecological footprint breakdown for backpackers regarding transportation, food, accommodation, activities and waste?
5) What environmental behaviours are practiced by hostels and their guests?
6) What are the options for decreasing the environmental impacts of backpacker tourism?

The following six objectives will be completed in order to answer the above research questions and ultimately obtain the goal of quantifying backpackers' ecological footprints in Ontario and Quebec:

1) Identify socio-demographic and behavioural characteristics of backpackers in Ontario and Quebec.

2) Determine the size of backpacker ecological footprints in Ontario and Quebec, calculate the average footprint and provide a breakdown of that footprint into accommodation, transportation, activities, waste and food components.
3) Compare backpackers' ecological footprints to the Fair Earth Share number, other tourism sectors and backpackers' home countries.
4) Determine the environmental level of concern held by guests and hostel managers, and provide information on the environmental behaviours usually practiced by the sample.
5) Determine whether backpacker ecological footprints could be decreased through making changes in transportation, accommodation, food, waste and activity choices.
6) Provide ideas on how backpacker sustainability could be increased in Ontario and Quebec.

1.3 Thesis Outline

There are six chapters in this thesis. Chapter One provides an introduction to the research and identifies goals, research questions and objectives. Chapter Two is divided into two main sections. Part One presents literature on sustainable development, sustainable tourism and the concepts, assumptions, benefits and limitations surrounding the Ecological Footprint. In addition, example calculations of the Ecological Footprint are illustrated, and previous study findings are presented where possible. Part Two discusses independent travelers and backpackers with regard to their socio-demographics and characteristics, and as they relate to sustainability. Chapter Three explains the methodology of the research study and the limitations of the findings. Chapter Four presents the results of the study, focusing on Ecological Footprint data, as well as socio-demographic and behavioural characteristics, and the environmental practices of the sample. Chapter Five attempts to determine the implications of the findings, as they relate to the literature presented in Chapter Two. Lastly, Chapter six provides a brief conclusion of the research and presents ideas for increasing the environmental sustainability of backpacker tourism.

Chapter Two

2. REVIEW OF THE LITERATURE

PART 1

2.1 The Environmental Impacts of Tourism

Tourist activities can place a large stress on a destination's environment whether through coral reef damage, soil erosion, the disruption of wildlife behaviours, or the overuse of energy and resources (Neto, 2003). Many tourists choose to maintain their home levels of consumption when at a holiday destination, which can be problematic for places that are not well equipped to handle the possibly damaging effects of mass tourism (Welford et al., 1999). As Welford et al. state, "the very activity of tourism often degrades what tourists came to experience and results in the common assertion that tourists destroy tourism" (p. 167). In the case of Caribbean cruise tourism, environmental impacts occur through pollution, the degradation of water resources, corral reef destruction, and the deliberate dumping of waste oil, chemicals and bilge water (Uebersax as cited in Johnson, 2002; Johnson, 2002). Furthermore, the average cruise tourist generates 1 kg of burnable waste, 0.5 kg of food waste and 1 kg of glass and tin waste per day for disposal (Uebersax as cited in Johnson, 2002). Although these types of tourism impacts are often visible at a destination, the travel to and from an area can possibly be more damaging in a global sense, especially in the case of air travel (Gossling, 2000).

According to Gossling (2000) air traffic is a major contributor of greenhouse gases, emitting carbon dioxide, nitrogen oxide, water vapour, hydrocarbons, carbon monoxide, soot and sulphur compounds. Since these emissions are released into the upper troposphere and lower stratosphere, there are also multiple warming effects, which are 2-4 times greater than that of CO_2 alone (IPCC, 1999). It is estimated that a two week package tour including a return flight distance of 7000 kilometers, a national connecting flight and fuel at the destination requires approximately 425kg of fuel, and results in 3385kg of CO_2 in the atmosphere (Gossling, 2000). The alarming fact about these impacts is that tourism is continually growing and developing. For instance, the World Tourism Organization (2005) predicts that the number of worldwide tourists will increase from 720 million in 2004 to 1.6 billion by 2020. Furthermore, if tourism continues to grow at its current rate, by 2012, there would have been a 150% increase in emissions from international flights departing EU airports (EU as cited in Bohler et al. 2006).

As a result of these predictions, there is a definite need to reduce tourism impacts, while enabling countries to continue benefiting economically from tourism dollars.

2.2 Sustainable Development

The concept of sustainable development was introduced by the World Commission on Environment and Development in its 1987 Bruntland Report. It was defined broadly as "development that meets the needs of the present, without compromising the ability of future generations to meet their own needs" (p. 54). Since then, there has been much criticism regarding the term, also known as sustainability, due to its ambiguous and vague implications. For instance, in Berry's and Ladkins 1997 study, English business owners were confused about the definition of 'sustainable'. They believed the concept was poorly defined and possibly used as a meaningless marketing tool.

Further issues have resulted from sustainability's competing objectives of economic, social and environmental needs. According to Parayil (1996), "criteria for sustainability should include not only environmental stability and improvement, but social, political and economic justice, improvement in the quality of life of vulnerable sections of the population at low cost, and an improvement in the overall status of women" (p. 952). Unfortunately combining the three objectives has proved difficult, both in definition, and within global scenarios. Holland (2003) for instance forgoes social factors when he defines sustainability as a "systemic approach that allows economic activity to be bounded by environmental limits" (p. 225). Similarly, Constantino-David (2001) states that "the problem with development is that is implies movement towards a goal. Through the years this movement has focused primarily on economic growth" (p. 233).

Although confusion still remains, progress has been made regarding on the definition and implications of sustainability, with Wackernagel and Yount (2000) reporting that two main messages can be derived from the term. The socio-economic imperative states that all people must have access to an adequate quality of life while the ecological imperative asserts that the earth's bioproductive capacity must not be compromised past the point of regeneration. In essence, humans must learn to live off the natural capital of the planet, or "any stock of natural assets that yields a flow of valuable goods and services into the future", rather than depleting vital resources (Wackernagel & Rees, 1996, p. 35). Natural capital can be categorized as renewable, replenishable or non-renewable. Renewable natural capital includes living species and ecosystems that produce and maintain themselves through photosynthesis and solar energy. Replenishable natural capital is non-living but restorable, such as water

supplies and the ozone layer. Lastly, non-renewable natural capital includes fossil fuels, minerals and other supplies that cannot be replaced once used. In order for life to be sustainable, humans must limit their consumerism to only the interest or the income generated from natural capital, in one of two ways. Firstly, a strong sustainability scenario would result in natural capital stocks being conserved and enhanced. Contrarily, weak sustainability occurs when losses of natural capital can be substituted through equivalent amounts or value of human-made materials. In the long term however, weak sustainability is not viable, as manufactured products often require natural capital as a prerequisite (Wackernagel & Rees, 1996).

2.3 Sustainable Tourism

The realization of tourism's negative impacts occurred simultaneously with the rise of environmentalism in the mid to late 1980's, which combined, resulted in the reassessment of tourism's role and value at destinations (Cooper, Fletcher & Wanhill as cited in Berry & Ladkin, 1993). From this reassessment and the ideas of sustainability found in the Bruntland Report, rose the concept of sustainable tourism. According to the World Tourism Organization (1996):

> "sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" (p. 30).

Sustainable tourism is believed to be more accepted in newly discovered areas where regular tourism may be seen negatively, and it may be the only path that will enable a community to develop while minimizing impacts on the environment (McNinn, 1997). Bramwell and Lane (as cited in McNinn, 1997) reinforce this idea by defining sustainable tourism as "a positive approach intended to reduce the tensions and friction created by the complex interactions between the tourism industry, visitors, the environment and the communities which are host to holidaymakers" (p. 136). Ayala (1995) believes there are three main ways that can assist a destination in becoming sustainable. The first is through using ecotechniques, which includes behaviours such as harvesting solar energy, collecting rainwater, recycling and using local materials. These techniques "can be very significant in terms of sustaining and enhancing the quality of a destination's physical environment" (Ayala, 1995, p. 353). The second method of attaining sustainability is through environmental sponsorship. This entails making a commitment to the environment, and communities in which hotels and resorts operate. Examples include

tree planting, creating conservation programs for local schools, fundraising for threatened species, or allotting an area for an environmental preserve. Lastly, sustainability can be achieved through eco-packaging in which hotels and resorts can offer guests environmentally oriented activities such as wildlife viewing.

As expected with the confusion surrounding sustainable development, achieving sustainable tourism has been, and continues to be a difficult challenge. According to Butler (1999), tourism researchers and policy-makers responded relatively slowly to sustainable development's concepts, and although progress has been made, many remain on the sidelines, while the debate continues on sustainability's definition and implications. Without a doubt, tourism uses natural resources and therefore places significant impacts on the environment (Neto, 2003; Welford, Ytterhus & Eligh, 1999; Gossling, 2000; Bohler, Grischkat, Haustein & Hunecke, 2006). A joining of tourism and sustainability concepts therefore seems like a natural move, however many questions arise regarding the validity of sustainable tourism, how it can be achieved and how one knows when it has been achieved. In Berry and Ladkin's 1997 study for example, British tourism business owners were unclear about the meaning of sustainable tourism and it was to be implemented into their businesses. Many owners felt that they were already being sustainable in their work, since they were not offering activities that were environmentally damaging.

Furthermore, questions remain about the eventual goals of sustainable tourism. Is it meant to create conditions that allow tourism activities to survive over the long term, possibly in the form of ecotourism or alternative tourism? Or is it rather a way of using tourism to contribute to the general goals of sustainable development (Hunter & Green; Butler as cited in Hunter, 2002)? Unfortunately, sustainable tourism is often adopted as a solution to development problems, regardless of the fact that destinations may not know the definition of sustainability, or be able to operate in a sustainable manner (Butler, 1999; Hunter 2002). One of the main issues is that although sustainable tourism advocates for minimal impacts on the environment, it is yet to be determined whether the natural environment must be conserved or preserved (Hunter, 2002).

Further confusion lies in what constitutes a sustainable tourism destination. Although the tourism industry has quickly embraced the marketability of sustainability concepts, in 2000, less than 5% of all tourism was considered to be conducted in a truly sustainable manner (Gossling, 2000). The issue appears to lie in the fact that since tourism destinations differ in activities, location and size, the sustainability challenges in each destination remain unique. As a result, measures and indicators used

will relate to the specific issues of each destination, complicating the development of strict guidelines regarding sustainable tourism destinations (Lee, 2001).

As in sustainable development, there is the argument of whether sustainable tourism at a destination should entail weak or strong interpretations. Weak sustainable tourism would involve continued economic growth, maintenance of adequate environmental quality and the continued use of current or future tourism products and locations (House; Stabler as cited in Hunter, 2002). In contrast, strong sustainable tourism revolves around protecting the natural resources that support tourism, rather than supporting economic growth at the possible expense of the environment (Hunter, 2002). Of course, as social needs are a primary consideration, it must also be asked whether sustainable tourism is useful to communities, or if it is just another popular term intended to gain the interest and money of tourists looking for meaningful holidays (Muller, 1994, as cited in McNinn, 1997). The answer remains unclear, and may depend on the characteristics of, and available resources in each tourist destination. As Butler (1999) states, "sustainable development is neither always possible, nor even always appropriate in the context of tourism" (p. 8). As such, the debate will continue on whether tourism can exist as an economic and development tool, while ensuring environmental and social sustainability in tourist destinations.

2.3.1 Measuring Sustainable Tourism

Since the concept of sustainability includes economic, social and environmental aspects, several measures encompassing these areas are needed to measure tourism's impact on the environment. Social and economic sustainability can be partly measured through the United Nations Human Development Index, which provides an indication of the overall well-being of a population, through measuring life expectancy, education and income (United Nations Development Program, 2006).

In contrast, the environmental sustainability of an area can be indicated through measuring its carrying capacity, defined as the "number of individuals of a given species that a given habitat can support without being permanently damaged" (Rees, 1992, p. 125). Unfortunately, there are two weaknesses associated with the carrying capacity theory. Firstly, the total ecological load of a population will vary according to income, technology level and their expected standard of living, and secondly, people need resources that the carrying capacity of that specific area may not be able to provide (Wackernagel & Rees, 1996). Other environmental sustainability indicators include the limits of acceptable change system and the environmental impact assessment, although both of these indicators

focus on the local environment and ignore the larger global consequences of travel, particularly in the transit phase (Gossling, Hansson, Horstmeier & Saggel, 2002). Although no indicator exists for the sole purpose of measuring environmental sustainability in a tourism context (Butler, 1993), promise appears to lie with the Ecological Footprint tool which takes into account the transit phases, provides impacts at a global level and above all, can be adjusted to address tourism scenarios.

2.4 The Ecological Footprint

The ecological footprint (EF) is an area-based indicator that measures the intensity by which humans use resources and generate waste, relative to that area's capacity to provide for these activities (Wackernagel & Yount, 1998). It is also referred to by Wackernagel and Yount (2000) as an 'appropriated carrying capacity' since every person appropriates the productive capacity of nature. Ecological footprint calculations take into account the land and water supplies needed to produce food, fibre and timber for consuming, absorbing waste generated by energy, and providing space for infrastructure (World Wildlife Fund [WWF], 2006). The end value is the number of global hectares of land and sea, defined as having "a world-average ability to produce resources and absorb wastes" (WWF, 2006, p. 14) required to support the life and activities of one individual. Since people consume resources from across the world, a person's ecological footprint incorporates the sum of component land areas regardless of their location on the planet (WWF, 2006). However, ecological functions that can be provided simultaneously on the same space must only be counted once, and therefore biotically productive space is referred to as mutually exclusive (Wackernagel & Yount, 1998).

According to the WWF (2006), the global EF in 2003 was 14.1 billion global hectares (gha) which approximated to an average of 2.2 gha per person annually; a value known as the 'fair earthshare'. Of these 2.2 gha, 1.7 were land-based ecosystems such as forests, cultivated land and pastures while the remaining 0.5 gha were ocean surface areas which were considered ecologically productive. However, it was discovered that of these 14.1 billion global hectares, only 11.2 billion were productive, thereby decreasing the average per capita biocapacity EF to 1.8 gha (WWF, 2006). According to the Global Footprint Network (2006), biocapacity is defined as "the capacity of ecosystems to produce useful biological materials and to absorb waste materials generated by humans using current management schemes and extraction technologies". Measurements for biocapacity do not take into account wild species that also rely on land and water areas, therefore a fair earth share value accounting for humans and wildlife would be smaller than 1.8 gha indicated here (WWF, 2006).

Although, the fair earth share value averages 1.8 gha per person, there unfortunately is much inequality with the distribution of humanity's footprint. A country's average per capita footprint is determined by its population size, the average amount consumed by residents and the intensity by which goods and services are produced for consuming. In addition, the average income of residents also plays a part with high-income countries possessing considerably higher ecological footprints than middle or low-income countries, since a higher income generally allows for a higher level of consumerism. Therefore, current average footprints range from almost 12 gha per capita for U.A.E residents, to only 0.8 gha per capita for Indian residents. The United States, Canada and the United Kingdom remain somewhere in the middle, averaging 9.6 gha, 7.6 gha and 5.6 gha respectively (WWF, 2006). Therefore by the fair earth share concept, neither the residents of the U.A.E, Canada, the United States or the United Kingdom are currently living sustainably while Indian residents are using less than their fair share of resources. With many countries averaging footprints above 1.8 gha per person (WWF, 2006), it is evident that the earth is experiencing an ecological overshoot, and natural resources are being consumed faster than they can be generated.

As ecological footprints vary across the world, countries can be categorized as ecological debtors, meaning their EF is greater than the biocapacity they produce, or they can be creditors whose biocapacity is greater than their ecological footprint. The United States and the United Kingdom are both ecological debtors with footprints that are 50% larger than the amount of resources each country can produce. In order to maintain these high footprints, countries in this situation can deplete their natural capital, import resources from other countries or generate more waste than their ecosystems can absorb. Canada, on the other hand, even with a large ecological footprint, is considered a creditor as it possesses a biocapacity which is over 50% larger than its footprint (WWF, 2006). As such, its bioproductive land can relatively easily support its population's level of consumption, however continuing with such high ecological footprints would not result in the achievement of sustainability targets, since one's footprint space cannot be shared (Wackernagel & Rees, 1996).

It is predicted by the WWF (2006) that by 2050, if business continues as is, the total EF of cropland and CO_2 will increase by 60%, while the demand for grazing and fishing grounds will increase by 85% and the use of forests, by 110%. Therefore, the average per capita footprint will increase from the current 2.2 gha to 2.6 gha, indicating that even though ecological resources and services are currently in short supply, the situation appears to only become worse in the future. However, if humanity can decrease its consumption to a more sustainable level, the average per person EF could be reduced to a much more manageable level of between 1.3 and 1.5 gha by 2100. As such, the ecological footprint not

only provides a measure of sustainability levels, but also compares humanity's ecological resource requirements, between different countries, different time frames as well within different scenarios, in order to provide an indication of where changes in consumption can be made.

2.4.1 Benefits and Limitations of the Ecological footprint

The ecological footprint has recently been proposed as a key indicator for measuring the environmental impacts of tourism (Hunter and Shaw, 2007). Unlike other locally based measures, such as carrying capacity or environmental impact assessments, the ecological footprint takes into account the consequences of transit as it relates to tourism. In addition, this tool indicates the global impacts of an activity and expresses resource demands in standardized hectares to facilitate understanding (Hunter & Shaw, 2007). As a result of these characteristics, Wackernagel and Yount (2000) were able to use the EF tool to prove that current levels of global resource consumption and waste generation were greater than the biosphere's biotically productive area. In addition, they could estimate from the EF indicator the amount of extra land that would be needed to satisfy current consumption levels, which in this case was three times what was available. In a tourism context, Wackernagel and Yount (2000) were also able to determine that at least 10% of the world's ecological footprint was occupied by the tourism industry's international component. Furthermore, the WWF (2006) used the EF tool to determine that the world ecological footprint in 2003 exceeded available supplies by 25%, indicating that the needed resources for 2003 were only fully produced by the earth in March of 2004.

Unlike other indicators, the EF does not assume that ecological productivity can be continually replaced with technological advances, therefore it highlights the issues that could arise when substitutes are no longer available (Senbel, McDaniels & Dowlatabadi, 2003). Furthermore, the EF can be calculated for specific components of a lifestyle, for entire nations or for business activities, and is therefore a flexible and versatile indicator (Holland, 2003; Hunter & Shaw, 2007). The common unit of measurement allows the 'ecological accounts' of these different components to be compared in terms of their impacts on the environment, in order to determine their level of sustainability and discover more eco-friendly alternatives (Wackernagel & Yount, 2000; Holland, 2003).

Although a promising tool, the Ecological Footprint has limitations and as such, its calculations cannot derive completely accurate values. Part of its limitations lie in that fact that knowledge is still developing on the potential of this indicator. As a result, there are several fundamental assumptions that

must be taken into account, in order to provide understand the foundation for Ecological Footprint calculations (Global Footprint Network 2006):

1) The resources people consume and the wastes they generate can be tracked.
2) Most of these resource and waste flows can be measured in terms of the biologically productive area necessary to maintain these flows. Resource and waste flows that cannot be measured are excluded from the assessment, leading to a systematic underestimate of the true Ecological Footprint.
3) By weighting each area in proportion to its bioproductivity, different types of areas can be converted into the common unit of global hectares; hectares with world average bioproductivity.
4) Because a single global hectare represents a single use, and all global hectares in any single year represent the same amount of bioproductivity, they can be added up to obtain an aggregate indicator of Ecological Footprint or biocapacity.
5) Human demand, expressed as the Ecological Footprint, can be directly compared to nature's supply (biocapacity) when both are expressed in global hectares.
6) Area demand can exceed area supply if demand on an ecosystem exceeds that ecosystem's regenerative capacity. This situation, where Ecological Footprint exceeds available biocapacity, is known as overshoot.

Above all, these assumptions indicate that the Ecological Footprint tool consistently underestimates the land needed to support an individual, population or business. As knowledge progresses on this concept, it can be expected that these assumptions will be slightly modified, or possibly even removed. However, at that point, other limitations may still remain. Currently, the largest weakness of the EF as a sustainability indicator is its inability to measure socio-economic factors, resulting in its need to be combined with other indicators in order to determine the overall sustainability of a lifestyle or activity (Hunter & Shaw, 2007). Since, the EF relates environmental consequences to the global biosphere, it also cannot assist in the understanding of local impacts (Gossling et al, 2002). Furthermore, EF calculations require detailed information on consumption and biomass yield figures, which can be difficult to obtain when statistical databases are incomplete.

As the assumptions indicate, there are many aspects that are currently not understood in great enough detail to be included in EF calculations. For instance, in 2000, the land needed for degradable items, household solid waste, industrial wastes and human made substances had yet to be included (Wackernagel & Yount, 2000). In addition, current EF calculations cannot provide a realistic view of

biodiversity loss. Although 12% of bioproductive area is allocated for biodiversity, this amount may still be insufficient for the 30 million species on the planet (Wackernagel & Yount, 2000). Due to the numerous limitations associated with the Ecological Footprint, Wackernagel and Yount (2000) believe that it underestimates human resource use and only expresses the minimum requirement for ecological sustainability. In contrast, some people perceive the EF as exaggerating humanity's impacts on the environment by including hypothetical land needed to absorb CO_2 and other waste products (Wackernagel & Yount, 2000). However, Wackernagel and Yount reaffirm that these waste products do exist and therefore need ecological space to be converted back into resources.

Clearly, although carrying a number of positive features, the limitations surrounding the ecological footprint enable it to only provide a rough indication of sustainability levels. These limitations appear to be well known and accepted by ecological footprint advocates. Rees (2000) for instance states that "ecological footprint analysis was not intended to provide a dynamic window on the future, but rather a snapshot in time. As such it can both help to assess current reality and to test alternative 'what if' scenarios on the road to sustainability" (p. 373). Furthermore, Redefining Progress (2002), which develops ecological footprint calculators and carries out EF studies, states that:

> "it provides a framework for making decisions that are consistent with the idea of living on the interest of our planet rather than liquidating the capital. In short, it aims to generate the relevant questions that policy circles need to address if they are serious about sustainability, detail the ecological costs and benefits of particular decisions, and identify intervention points for action for sustainability."

2.4.2 Calculating the Ecological Footprint

There are six mutually exclusive categories of ecologically productive areas that are summed to assess an individual's, population's or business' ecological footprint. Cropland, being the most productive land, grows the largest amount of plant biomass consumable by humans, while pasture, consisting of grazing land for livestock, is significantly less productive. Forest land can be in the form of tree plantations or natural forests and, aside from providing timber can also prevent erosion and stabilize the climate. Ocean space is measured in terms of its surface area and is most productive along the continental coasts. Built-up land refers to areas used for roads and settlements, and is usually located in the most fertile areas of the world, corresponding to a significant loss of ecological capacity. The last category, energy land or fossil energy, is the area required to absorb CO_2 that is released from fossil fuel combustion (Wackernagel and Yount, 1998). However, this definition of energy land remains under

debate, and therefore it may be better explained as the amount of land needed to produce a renewable substitute of the specified energy (Ferguson, 2002). This change in definitions would produce slightly different values but would also strengthen the logical basis of ecological footprinting (Ferguson, 2002).

In addition to these six ecologically productive areas, ecological footprint calculations also require the use of yield and equivalence factors. The yield factor compares the productivity of a certain category in a country's ecosystem to worldwide average productivity rates. For instance, the potato yield per hectare in Canada would be compared to the average yield of potatoes per hectare worldwide. The equivalence factor, on the other hand relates the productivity of a particular ecosystem category to that of average bioproductive space. For example, a typical forest ecosystem is 1.2 times more productive then average bioproductive space (Wackernagel & Yount, 2000). In basic terms, ecological footprint calculations involve dividing the annual average consumption of a product by its average annual productivity (Wackernagel & Rees, 1996). Although appearing relatively simple, many categories require extra calculations. For instance in the case of air travel, a series of component calculations must be conducted, including the weighting of values by a factor of 2.5-3.0 to take into account the extra warming effects of aircraft emissions when released at 10-12 km height (IPCC, 1999). A study further detailing the ecological footprint calculations for air travel was conducted by Hunter and Shaw in 2007. To assist with understanding of how ecological footprints are calculated, in this case for air travel, an example from their work is presented below (p.49).

1) Determine the total, round trip flight distance (km)
2) Obtain energy use per tourist (MegaJoules, MJ) by multiplying flight distance by an energy intensity conversion factor of 1.75 – 2.75 MJ/km.
3) Obtain the equivalent land area (ha of forest) per tourist (per year), by dividing energy use per tourist by 73 GJ/ha (i.e. the number of gigajoules that 1 ha of forest will sequester, in carbon dioxide equivalent, per year when liquid fossil fuel is combusted) (World Wildlife Fund, 2000).
4) Allow for the additional radioactive forcing of aircraft emissions other than carbon dioxide emitted at altitude (IPCC, 1999) by multiplying by an average factor of 2.7 (Gossling et al., 2002), giving a new estimate of required forest land (ha).
5) Multiply by the year-appropriate 'equivalence factor', to correct for forest land being more productive than average world space to give a final estimate of the transit zone per tourist footprint in gha/year.

Although fairly comprehensive, this transportation calculation does not include the transit phases of traveling to and from the airport, nor the in-flight food and beverage consumption, which understandably is thought to be minimal in comparison to the EF of aircraft fuel consumption. In addition, yield, equivalence and conversion factors may differ with individual scenarios and the county in which the activities take place. For instance, in the case of air travel, the conversion factor is influenced

by the length of journey. Gossling et al. (2000) suggests 2.0 MJ/km while Lenzen (1999) estimates 1.75MJ/km for long haul flights. Short haul flights have higher conversion factors, estimated by the Energy Efficiency Conservation Authority (as cited in Hunter & Shaw, 2007) to be 2.75MJ/km. Based on these figures, Hunter and Shaw choose to use a conversion value of 2.0MJ/km for long and medium haul flights. Usually in situations where several different values are available for calculations, the most conservative number is used, to ensure that EF values continue to underestimate environmental impacts (Wackernagel & Rees, 1996).

2.5 Ecological Footprint of Tourism

The use of the ecological footprint as a tool for measuring the sustainability of tourism activities is a new concept, and one that is not very straightforward given tourism's diversity in transportation, food and accommodation components (Hunter, 2002). However, according to Hunter (2002), the EF of these individual tourism components, can be calculated and summed to produce an approximate tourism ecological footprint. These footprints, should in theory, indicate which types of tourism are and are not sustainable, in order to assist decision and policy makers in developing tourism regulations (Wackernagel and Yount, 2000). As a new concept, it appears that relatively few researchers have attempted to integrate the ecological footprint into tourism scenarios, however, among a few others, this has been successfully completed by Gossling et al. (2002), the World Wildlife Fund – UK (2002) and Patterson, Niccolucci & Bastianoni (2007).

Gossling et al.'s (2002) study, which focused on the ecological footprint of international leisure tourists in the Seychelles, divided resource and area use into five categories of transportation, accommodation, activities, food and fibre consumption. As most tourists were international, air travel was the main component of transportation, however travel to and from airports and local travel at the destination was also included. According to Gossling et al.'s (2002) results, the average tourist required 1.9 gha of world area, which is equivalent to 17-37% of the annual footprint of citizens in industrialized countries, to maintain their resource consumption level during a stay of approximately 10.4 days. If this lifestyle were maintained throughout the year, it would equate to an ecological footprint of 65 gha annually, an immense increase from the available biologically productive area of 2 gha per person per year (Gossling et al., 2002).

Relatively similar results were produced by the World Wildlife Fund – UK (2002) in their study on U.K. tourists participating in package holidays to the popular Mediterranean destinations of Majorca

and Cyprus. In this case however, the study focused more on the resort and travel company rather than the tourists, in an attempt to determine ways in which the environmental impacts of resort operations could be decreased. Results were provided in hectares per bed night, and the four categories of tourism consumption, as they related to resort operations, were air travel, waste, food, and hotel energy use. On average it was found that the EF per bed night for Majorca was 0.03gha, resulting in a 2 week accommodation ecological footprint of 0.37gha. In contrast, the results for Cyprus were higher at 0.07gha and 0.93gha respectively, primarily due to the larger flight distance from the U.K. Overall this study indicated that a 2-week holiday in Majorca and Cyprus for U.K tourists accounted for approximately 20% and 50% respectively of their annual Fair Earthshare value (WWF – UK, 2002).

The last study, conducted by Patterson et al. (2007) was conducted with a considerably different focus. In this case, the ecological footprints of tourists in the Val di Merse watershed in Tuscany were compared to the average ecological footprints of the host population. The tourist components included were food and fibre consumption, arrival transportation, local transportation, activities and accommodation, over an average stay of 5.3 days. Although the ecological requirements of transportation to and from the destination were measured, they were not included in destination footprint calculations, in order to ensure a more equitable base from which to compare footprints. The results indicated that tourists used slightly fewer resources during their stay than the host residents, with equivalent annual ecological footprints of 5.28 and 5.47 gha respectively. Both of these values were less than the average estimated ecological footprint for tourists' countries of origin, which was 6.47 gha per year. However, had arrival transportation been included, the average tourist EF would have risen substantially to 32.8 gha annually, indicating the immense negative consequence of transportation on the sustainability of tourism activities

Through the results of these studies, one can clearly see the impact that holiday's place on individual's annual ecological footprints. As an overseas holiday can use almost an entire fair earth share footprint in a matter of two weeks, the difficulties associated with combining tourism and sustainability concepts become much clearer. Of course, tourists at a destination may be able to maintain a lifestyle at or near fair earth share values, however as tourism requires people to be moved between locations, transportation is an intricate and vital aspect of the touristic experience and its impacts cannot simply be ignored. The ecological requirements of air travel in particular, have been found to place substantial impacts on travelling footprints, accounting for 97.5% in Gossling's (2002) study and 86% in the study by Patterson et al. (2007), to 50% in the WWF-UK's (2002) study. Of course, impacts will differ based on the distance traveled, however "as long-distance travel contributes substantially to global warming,

the current understanding of tourism as a sustainable economic activity needs to be revised" (Gossling et al., 2002, p. 207).

Ecological footprinting in tourism scenarios is still a new concept, however it shows a promising ability to indicate the global impacts of tourism activities and, in particular, the immense consequences of tourism-related transportation. However, there is still much research to be completed to determine the resource requirements and sustainability levels of different types of tourism, and tourism activities. The next section of this literature review will focus on one of these tourist sectors, namely backpacker tourism, which in the past has been largely overlooked (d'Anjou, 2004), with regards to travelling characteristics and within a sustainability context.

PART 2

2.6 Independent Travelers

Recently, there has been significant growth in independent travel, and a corresponding decline in package vacations (Scutt, 1997; Pryor, 2001, as cited in Hyde & Lawson, 2003). Morrison, Hsieh and O'Leary (as cited in Hyde & Lawson, 2003), define independent travellers as "those who make their own transportation and accommodation arrangements, choosing not to buy prearranged packages or tours" (p. 13). The size of this sector is evident in New Zealand, where during 2001 and 2002, independent travellers accounted for 90% of Australian, 92% of British and 75% of American visitors (Tourism New Zealand, 2002, as cited in Hyde and Lawson, 2003). More recently in New Zealand, these travellers have accounted for 49% of all visitors, indicating that independent travel continues to grow in popularity (Tourism New Zealand, 2006).

Independent travellers can be categorized as old or new tourists (Poon as cited in Hyde and Lawson, 2003). Old tourists, who treat holidays as an escape from life stresses, are attracted to summer environments and are cautious about new or unfamiliar destinations, thereby preferring to remain on the main tourist trails. New tourists, however, are adventurous, spontaneous, "flexible, independent, and experienced travellers, whose values and lifestyles are different from those of the mass tourist" (Poon as cited in Hyde & Lawson, 2003, p. 14). These tourists may come in the form of backpackers; relatively young tourists who travel under the same concepts. As such, with the recent increase in independent travel (Loker-Murphy & Pearce, 1995; d'Anjou, 2004), there has been a corresponding worldwide growth in the backpacker market during the past two decades (Sorensen, 2003).

2.7 Backpacker Characteristics

The backpacker tourist market is comprised of a heterogeneous population of travellers, varying from well-educated Westerners taking study breaks to Israelis relaxing after military service. These travellers vary in ages, nationalities, trip aspirations, values and desires, and pride themselves on nomadism, self-organization and self-reliance (Sorensen, 2003). According to Loker-Murphy and Pearce (1995), backpackers have a preference for budget accommodation, social interaction, independent and flexible travel plans, prolonged and multi-destination journeys and unstructured activities that expose them to nature, adventure and different cultures. Most are relatively well educated and today, the vast majority have post-secondary degrees (Sorensen, 2003). Although there is much variation in the backpacker population, there are some characteristics and behaviours that may influence their actions surrounding the concept of environmental sustainability. These include age and gender, nationality, length of journey, expenditure, accommodations used, attractions visited and overall backpacker culture.

2.7.1 Backpacker Age and Gender

The ages of backpackers vary widely in the literature, although according to Pearce, (as cited in Ross, 1993) backpackers tend to be under the age of 40 years. Sorensen (2003) believes these tourists to be aged 18 to 33, with the majority ranging from 22 and 27 years old, while Loker-Murphy and Pearce (1995) consider the youth backpacker to be 15 to 29 years old, and contemporary backpacker to be 30 years or older. Similarly, Statistics Canada, and the Association of Leisure and Tourism Education (as cited in Hecht & Martin, 2006), see traditional backpackers as youth tourists between 15 and 25 years of age. In a Canadian study completed by Hecht and Martin (2006), youth tourists accounted for 63.1% of the sample, while transitional backpackers, aged 26-29 years accounted for only 21.6%. The remaining 15.3% included contemporary backpackers aged 30 and over. Similar results were found in another Canadian study conducted by d'Anjou (2004), where most youth travelers were between 18 and 26 years of age. However, this study also included group travel, and youth who may have not have necessarily traveled as 'backpackers'.

In terms of backpacker genders, there appears to be a male predominance, as discovered by Sorensen (2003) who found the male to female ratio of these tourists in Australia to be 60/40. He believes that this ratio may increase in certain regions, such as in developing countries where risks may be higher and tourism activities more dangerous. Hecht and Martin (2006) also discovered a gender difference in their study where 56% of respondents were males and 44% were females. Therefore, one

can conclude from these studies that, with exception, most backpackers are in their twenty's and that there is a slightly higher prevalence of males than females.

2.7.2 Nationality and Destination's Visited

According to Sorensen (2003), who conducted a worldwide ethnographic study, most backpackers originate from North America, Australia, New Zealand and Western Europe. Northern European countries are generally well represented, and numbers from Israel and Japan are increasing, however few backpackers originate from the Mediterranean area (Sorensen, 2003). Hecht and Martin (2006) discovered similar results in their study where most backpackers originated from Australia, the United States, Germany, Ireland, Japan, the Netherlands, the United Kingdom and Canada. According to the World Tourism Organization (as cited in d'Anjou, 2004) the number of backpackers originating from Asia Pacific, Africa and Middle East is also increasing.

2.7.3 Length of Journey and Expenditure

According to Mohsin and Ryan (2003), a backpacker's duration of stay and expenditure patterns will depend on his or her motivations and socio-demographics. International backpackers generally aim for destinations far from home where they can travel intra-regionally, while domestic backpackers plan shorter trips to a few specific areas (d'Anjou, 2004). During Sorensen's (2003) study, backpackers traveled for 2.5 to 18 months, however most averaged between 4 and 8 months and few planned on continuing past one year. Aside from motivations and socio-demographics, the length of travel will obviously greatly depend on the money available. Being budget travellers, backpackers are generally sensitive to accommodation, food and transportation prices, but may be willing to spend more on entertainment, shopping and attractions (SYTA Active Canadian Members Survey, as cited in d'Anjou, 2004). The average daily expenditure of backpackers, discovered to be $45 per day in Hecht and Martin's (2006) study, is considerably lower than the approximate $144 generally spent daily by other tourists in Canada (Statistics Canada, as cited in d'Anjou, 2004).

2.7.4 Backpacker Accommodations and Activities

Although backpackers may use a variety of accommodations, they are commonly found in youth hostels, with Asians and North and South Americans preferring to stay in hostels that are part of a chain

or network affiliation (d'Anjou, 2004). The most well-known affiliation is probably Hostelling International [HI]; a brand which covers 90 youth hostel associations in more than 80 countries, and requires hostel members to maintain certain standards within their facilities (HI, 2008). Hostels, whether affiliated or private, generally provide good quality, affordable accommodation in friendly surroundings, to enable tourists to discover areas at a low cost and meet like-minded travellers (HI, 2008). Although dormitories are common, many hostels also offer rooms that sleep singles, couples or families, with en-suite or shared bathrooms. Extra facilities may include guest kitchens, cafés or restaurants, TV rooms, libraries, common rooms and laundry facilities (HI, 2008). Although hostels generally cater to backpacker travellers, past studies conducted by Nash, Thyne & Davies (2006) and Mohsin and Ryan (2003) have found backpackers to spend only 55% and 64% of their time in hostel accommodations, staying in bed and breakfasts, hotels, motels and resorts for the rest of their journeys.

In terms of activities, based on the 'new tourist' characteristics discussed by Poon (1993, as cited in Hyde and Lawson, 2003), it is no surprise that backpackers are experience-driven tourists who desire to explore different places, increase knowledge, experience cultures and find excitement (d'Anjou, 2004). As such, backpacker itineraries are usually planned around activities that are informal, active and in which they can participate (d'Anjou, 2004). Although they travel independently or in small social groups, backpackers are known to sometimes purchase organized sightseeing tours during their travels (Sorensen, 2003).

2.7.5 Backpacker Culture

Sorensen (2003) discovered during his study that accepting the 'backpacker' term as a means of self-identification enabled these tourists to feel a certain identity and sense of belonging to a heterogeneous population, but one that contained common and implicit values, morals and codes of conduct. As such, even though they may have varied greatly in socio-demographics and traveling behaviours, being a 'backpacker' enabled them to be distinguished, and to possibly distinguish themselves from mass tourists. This backpacker culture is comprised of certain themes including change, road status, appearance and conduct, flexibility and the grapevine network, all of which are discussed in further detail below.

The idea of change is a key aspect of the backpacking culture as this type of travel has become a useful activity for people experiencing a transition in life (Cohen, 2003). Some of these tourists may be between life stages or escaping from a former life pattern, while others may simply be taking time out to

'search for themselves'. In Western societies a backpacking holiday is especially representative of the transition between late adolescence and early adulthood which is characteristic of the 20-30 year old age group (Cohen, 2003). One of the most common ideas behind backpacking is that of the 'rite of passage' which was suggested by Turner (1973). In this situation the person exits their normal life to enter an unfamiliar situation abroad. During their travels they resolve problems and make decisions independently; thereby proving their competence and allowing them to return to their home communities as adults.

A second theme of backpacker culture is road status, which refers to the travelling experience of an individual (Sorensen, 2003). As road status is experience-driven, it is almost a prestigious achievement, indicating that a person is organized, self-reliant and clearly detached from mass tourists since their experience enables them to find pristine places and get a 'real' feel for an area, culture and people (Desforges, 1998, as cited in Sorensen, 2003). Bradt (as cited in Hampton, 1998), refers to this road status as a 'badge of honour' indicating that these tourists generally survive on small budgets, use local transport, carry their belongings in backpacks, bargain for goods and services and stay away from mass crowds (p. 641). One can attain road status by wandering off the mass trail, surviving difficult experiences and travelling inexpensively, all of which signal knowledge of the back roads and the ability to acquire services and products at local prices (Sorensen, 2003). Determining who has road status may be difficult without conversing with people about their traveling experiences, however it has been suggested that road status may be noticeable by backpackers' clothes, which may look dirty to the average tourist, but to other backpackers, they tell tales of experience (Sorensen, 2003).

The common desire for road status leads to the next theme of backpacker culture, being conduct and appearance. In the past, stereotypical perceptions of backpackers have produced images of tourists being disrespectful of cultural differences, wearing excessively casual dress, abusing alcohol and taking part in casual, sexual encounters (Cohen, 2003). In addition, backpackers have been criticized for exploiting artisans and traders through excessive bargain hunting, being too invasive in their desire to have contact with local people, and ignoring social norms (Goodwin et al, 1998, Butler 1990, Noronha, 1999 as cited in Scheyvens, 2002). These negative images caused countries such as the Maldives, Bhutan, Goa and Botswana to ignore or actively discourage backpackers in the past, believing them to not be vital to tourist economies (Wilson, 1997; Wilson, Wood & House as cited in Scheyvens, 2002; Baskin as cited in Scheyvens, 2002). These days however, backpackers have dismissed this uncomplimentary image by being, or at least appearing, more financially stable, better educated and well-

informed, internet savvy and expecting the latest in entertainment and facilities (Travel and Tourism Analyst as cited in Hecht & Martin, 2006; d'Anjou, 2004).

The last two themes of backpacker culture being flexibility and the grapevine network are somewhat interrelated. Flexibility in backpacker tourism is found not only in itinerary layout or lack thereof, but also in the formation of social groups. Many backpackers will spend time with fellow travellers who share their desire for nomadism and self-organization. As these friends disperse and friendships are dissolved, they will be replaced by new ones (Sorensen, 2003). This high level of social interaction, whether occurring during sightseeing activities, pub crawls or relaxing afternoons at a hostel, leads to the grapevine network. This frequent exchange of information between backpackers reinforces their socially constructed identity and the popularity of certain backpacker routes, while providing vital facts for decision-making (Murphy, 2001).

2.8 Backpacker Travel in Canada

Corresponding with the relatively little literature available on worldwide backpacker tourism, there is a lack of information on the Canadian backpacker market. At the time of this research, only two previous studies were discovered on backpackers in Canada. The first written by d'Anjou (2004) and conducted by the Youth Tourism Consortium of Canada was titled 'Youth Tourism in Canada'. This study broadly focused on the general characteristics and economic significance of group and independent travellers "30 years of age and under, who [were] travelling outside the family unit, not for business, and not primarily to visit friends or relatives, and whose travel includes at least one overnight stay" (p. 5). With the inclusion of group tourists, and without mention of low budgets, flexible itineraries, hostels or public transportation, this research was clearly not limited to 'backpacker' travellers. The second study conducted by Hecht and Martin in 2006 had a decidedly narrower focus. This research attempted to understand the characteristics of hostel-based backpacker tourists in the Greater Toronto Area and determine their preferences regarding accommodations. Although these two studies had markedly different goals, combined they provide basic information about the size and economic significance of the Canadian youth and backpacker tourism market.

According to d'Anjou (2004), in 2002, the money spent by youth tourists in Canada amounted to approximately C$12.3 billion, and accounted for almost 23% of Canada's Travel and Tourism Industry expenditures. It is estimated that of this amount, C$5.5 billion was spent by independent youth travelers. With regards to tourist numbers, during 2002, there were approximately 20 million international youth

tourists visiting Canada with the majority being under 20 years old, the remaining being split relatively equally between the 20-24, and 25-30 year old age groups. The number of domestic youth tourist dominated all age groups, amounting to almost 66 million visitors under 30 years old. This number however, also includes group and school-based travel. In total, independent youth travelers accounted for approximately 38 million (39.5%) of the total number of youth travelers (Marier & Palmer as cited in d'Anjou, 2004). It appears that these relatively high backpacker and youth tourist numbers are continuing to increase, as they did in during the 1990's at a rate of 20 to 25% each year. Furthermore, according to McCullough (as cited in Hecht and Martin, 2006), the "backpacking travel segment has been the only segment within the hospitality industry to experience growth since 2001" (p. 70).

It appears that the information provided above is the extent of knowledge on the Canadian backpacker tourism market, indicating the need to further research in this area. According to Hecht and Martin (2006), before their study was conducted, the research on backpacker profiles and service preferences in Canada and the Greater Toronto Area was non-existent. In addition, although Canada has the potential to benefit well from this youth tourism sector (d'Anjou, 2004), "the Canadian tourism industry has, as a whole, been slow to recognize the importance of youth travel as a strong and growing market sector" (p. 1). As a result, "the youth travel market in Canada has been largely overlooked, neglected in favour of other sectors" (d'Anjou, 2004, p. 1). These perceptions clearly indicate the need to continue researching the Canadian backpacker market with regards to their general characteristics and traveling behaviours.

2.9 Backpacker Travel and Sustainability

Backpackers are well known for traveling 'off the beaten track', which distinguishes them from mass tourists (Sorensen, 2003). These budget travelers are often interested in meeting people, sharing the local lifestyle and taking part in activities that encompass nature, culture or adventure (Locker, as cited in Scheyvens, 2002). As a result, and in combination with their generally low travelling budgets, it has been suggested that backpackers are lower maintenance travellers than tourists who require more amenities and luxuries within their destination. As stated by Scheyvens (2002) " the backpacker market has been quite kind to the environment, especially … compared to the resource-guzzling five start tourists" (p. 157). If backpackers are in fact lower maintenance and environmental friendly, then catering towards backpackers may prove useful for small and local communities who perhaps do not have the resources, experience or skills to provide for more moneyed tourists (Scheyvens, 2002). As Riley (as cited in Scheyvens, 2002) states, backpackers are:

> "not so concerned about amenities (e.g. plumbing), restaurants (e.g. Westernized food), and transportation (e.g. air conditioning) geared specifically to the tastes of the mass tourist. If a budget traveler place has an appeal to western tastes (e.g. banana pancakes), it requires minimal infrastructure" (p. 153).

There are many ways in which backpackers can contribute to the economic sustainability of areas, regions or countries. As budget tourists, backpackers generally spend less per day than do other travellers. However, as their journeys are generally prolonged (Loker-Murphy & Pearce, 1995), the overall expenditure over the length of their stay is often considerably more than that of average tourists, enabling them to possibly be significant contributors to tourism economies in both developed and developing countries. For instance, during a study done by Haigh (1995, as cited in Scheyvens, 2002) backpackers in Australia spent an average of US$ 2,667 throughout their stay, compared to the overall tourist average for the country of US $1,272. Furthermore backpackers like to travel off the beaten path, and remain away from mass tourists. As a result, they are also able to spread their expenditures across a large geographic area, thereby possibly assisting remote or isolated towns that may be disregarded by luxury-seeking tourists (Loker-Murphy & Pearce, 1995). Backpackers are also known to buy locally produced goods and services, which enables them to contribute significantly to local economic development and results in smaller economic leakages from an area than those of overall international tourism (Scheyvens, 2003). By supporting these local and small-scale entrepreneurs and workers, backpackers can assist areas in becoming economically stable in an independent manner:

> "Given the political will to constrain the larger players, backpacker tourism could increase local participation in real development, part of a more sustainable long-term strategy which attempts to balance local economic development needs against powerful interests wishing to build large international tourism resorts" (Hampton, 1998, p. 655).

Although backpacker tourism appears to be useful for the economic, and therefore social development of areas and countries, in order for sustainability to be achieved, the environmental impacts of backpacker tourism must also be discussed. At the time of this study, there appeared to be little information on backpacker tourism in an environmental context. However it is believed that backpackers may contribute to environmental sustainability through their low travelling budgets which causes them to limit their spending and therefore consume fewer resources than the average tourist (Scheyvens, 2002). With regards to backpacker accommodation, an Australian study conducted by Becken, Frampton & Simmons (2001), compared the energy usage of various types of accommodation. It was found that total energy usage for hostels was similar to that of B&B's, motels and campgrounds, and significantly less than hotels. However, as hostels maintain a higher density of people, the energy use per visitor night was

three to four times less than a hotel or B&B and actually more similar to that of a motel. Therefore, by simply staying in hostels, with high occupancy and density rates, backpackers may be unknowingly already contributing to the environmental sustainability of the destination.

Another study conducted by Firth and Hing (1999) focused on the environmental attitudes of backpacker travellers and explored the eco-friendly practices of hostels in Byron Bay, Australia. It was found through the research that three of the six hostels were relatively eco-friendly, while the others appeared relatively insensitive to environmental issues. Of the backpacker guests, only 3% ranked implementation of eco-friendly practices as the most important factor influencing their hostel choices. However 25% of respondents reported that they would choose an eco-friendly hostel over another if the environmental practices were advertised.

These studies indicate that although backpackers may use less energy per person, they are not necessarily environmentally friendly travellers, possibly due to hostels practicing few environmental behaviours, a general lack of interest or lack of education on the environmental impacts of travelling. A conclusion about their general eco-friendliness however, cannot be readily produced from two vastly different studies. Therefore, although backpackers clearly can contribute to economic sustainability, more detailed and narrow-focused research is needed to determine if their low maintenance travelling lifestyle and their smaller consumption levels (Scheyvens, 2002) also enable them to be environmentally sustainable travellers.

2.10 Summary of Literature Review

Tourism is "one of the largest single sectors of world trade" and one of the world's largest industries (Hunter, 2002, p.8). However, in recent years it has been discovered that tourism activities can place a number of negative impacts on the natural environment (Neto, 2003; Welford et al, 1999; Gossling, 2000). Since many tourist holidays require the use of aircraft, a particular concern surrounds air transportation, which is a major contributor to greenhouse gas emissions (Gossling, 2000). As a result of these impacts, and since the introduction of 'sustainable development', there has been much discussion over the need to incorporate sustainability concepts into a tourism context. Although considerable confusion still surrounds the definition and meaning of sustainable tourism, it is generally accepted that sustainability-based principles and approaches to development are desirable within the tourism sector (Wackernagel & Rees, 1996).

There are many ways in which tourists and tourism destinations can become more environmentally friendly, however the main challenge lies in being able to accurately measure sustainability levels. Recently, the ecological footprint has been suggested by Hunter and Shaw (2007) as a key environmental indicator of sustainable tourism. As an area-based indicator, it measures the intensity by which humans use resources and generate waste, relative to an area's capacity to provide for these activities (Wackernagel & Yount, 1998). There is currently much inequality between the ecological footprints of different countries, with Canadians generating a footprint three times the size of the fair earth share value, estimated to be 2.2 gha, or 1.8 gha if only considering biologically productive areas (WWF, 2006).

Although several weaknesses currently surround the ecological footprint concept, this method enables an individual's footprint to be broken down into lifestyle components of accommodation, transportation, food, consumer goods, and services. As a result, it can be well adapted for a tourism context, and has been successfully used in a limited number of studies to measure the ecological footprints of certain types of tourists (Gossling, 2002; WWF – UK, 2002, Patterson et al. 2007). However, it appears that this indicator has not yet been applied to the heterogeneous backpacker market; a population of tourists who travel on low budgets, for prolonged, flexible periods of time and who pride themselves on being immersed in local cultures (Cohen, 2003; Sorensen, 2003; Loker-Murphy & Pearce, 1995). There is currently little information available on backpackers in Canada, however it is speculated that this tourist sector may be environmentally friendly travelers due to their limited travelling budgets and low consumption levels (Scheyvens, 2002). Therefore, this research attempts to determine the socio-demographic profile of backpacker tourists and evaluate the environmental sustainability of this travelling market in Ontario and Canada, in an attempt to determine whether Scheyven's (2002) speculation is in fact correct.

Chapter Three

3. METHOD OF STUDY

The ecological footprint has been suggested as a key environmental indicator of sustainable tourism (Hunter & Shaw, 2007). With the ability to reduce individuals' ecological resource requirements into simple numerical values, it is well suited for a tourism context where comparisons can be made regarding the environmental sustainability of various types of travel. As a relatively new concept, the ecological footprint indicator cannot yet account for all lifestyle components and products. Therefore it is understood that ecological footprint values may not be perfect indications of resource requirements, and that rather, results will be an underestimation of actual impacts.

Through using the ecological footprint measure, this study will attempt to calculate and evaluate the environmental sustainability of backpacker tourism. This chapter will provide details on the research experience, the methods used to gather the needed information and the resulting data manipulations and calculations. In addition, it will outline assumptions made during the research and analysis process, and the limitations of the study.

3.1 Measuring Unit: The Backpacker Trip

The environmental impacts of tourism vary greatly depending on the type of transportation used to reach a destination, the resources required to maintain accommodation facilities, and whether activities involve walking around the area, or participating in a guided sightseeing bus tour. Understandably, it is decidedly difficult to measure the environmental sustainability of tourism as a whole, or within individual sectors where variety may still exist. However according to Hunter (2002), it is possible to measure the ecological footprint of a tourism sector by calculating and summing the footprints of individual tourism components.

Past ecological footprint calculations conducted by Wackernagel and Rees (1996) in contexts other than tourism, have included the categories most commonly used for the collection of official statistics, being food, housing, transportation, consumer goods and services. With slight modifications, these categories can be relatively easily adapted to tourism scenarios. This study adopted the

accommodation, food and transportation components used in past research, and added in two extra categories, being waste and activities. Although, a tourist ecological footprint would ideally include all goods and services purchased during the tourism experience, such as souvenirs, clothing, postal services and telephone use, it would simply be too difficult and complex to determine the land requirements of all consumer goods. In addition, as backpackers travel on low budgets and are frugal in their spending (Loker-Murphy & Pearce, 1995; d'Anjou, 2004; Cohen, 2003), it was assumed that this category would not have major impacts on the size of a backpacker's total ecological footprint. For this reason, most aspects of goods and services were excluded from the study, however the money spent on entertainment, and the number of cigarettes consumed each day were retained.

The components included in this study, being food, transportation, accommodation, waste and activities, were incorporated into the standardized measurement of 'the backpacking trip'. As such, the data collected on these individual areas represented levels of personal consumption, as well as the indirect consumption gained from accommodation use. Through evaluating the combined resource requirements of these individual components during a limited time period, the researcher was able to develop a well-rounded understanding of the impacts placed on the environment by backpacker tourism.

3.2 Data Collection Process

During the data collection period, the researcher travelled to several hostels in Ontario and Quebec in order to survey backpackers and discuss environmental sustainability issues with hostel managers or owners. As such, primary data were collected in both quantitative and qualitative forms. Before inputting the data into the ecological footprint calculator (Redefining Progress, 2003), secondary data were collected through conversion factors, distance calculations and internet research in order to convert the primary data into the measurements required for ecological footprint calculations. This section will provide further information on both the information gathered and the research process.

3.2.1 Population and Research Sample

This study focuses on the environmental sustainability of backpacker tourism. Although backpackers are known to use a variety of accommodations from hotels and bed and breakfasts, to resorts and motels, they are most commonly found in youth hostels (Nash, Thyne & Davies, 2006; Mohsin and Ryan, 2003), which specifically cater to their low travelling budgets and desires for socialization, active activities and flexible itineraries (HI, 2008). As these youth hostels are universally recognized for being

the primary form of backpacker accommodation, and to provide consistency for future sustainability studies in the backpacker sector, the researcher developed the sample group solely from youth hostels located in various areas of Ontario and Quebec.

Although initially it was thought that developing a sample list of study hostels in Ontario would be relatively easy, this process actually proved to be difficult, eventually resulting in the addition of three Quebec-based hostels, in order to further boost sample numbers of both hostels and backpackers. In the beginning stages a list of so called 'hostels' was compiled through numerous Internet searches of backpacker accommodation websites such as Hostelworld.com, Hostels.com and Hostelbookers.com. Since some hostels do not advertise on these sites, the search was extended to Internet search engines such as Google, until at 82 hostels, the list eventually appeared to be complete. On further verification, through internet searchers and conversations with managers from both HI-Canada and BHC, it was discovered that many of these accommodations simply advertised themselves on hostel websites in order to attract travellers, while few actually offered the atmosphere or general amenities considered to be an intricate aspect of hostelling (HI, 2008). In an effort to develop a sample list that truly represented backpacker tourism, and in essence, to ensure that there were sufficient numbers of backpackers in the sample hostels, the researcher purposely excluded 'hostels' that did not offer the usual hostel amenities and facilities (dormitories, budget prices, per person rates, guest kitchens, laundry facilities, reachable by public transportation, social activities, etc.).

Out of the 82 hostels, 45 had either been forced to close in recent years due to low numbers, were closed for renovations, or primarily catered to travellers other than backpackers, categorizing them more as ecolodges, guest houses, B&B's and cottage resorts than hostels. Therefore the revised hostel list, from which to develop the sample population, included 37 hostels, some which were affiliated with HI or the unrelated Backpacker Hostels Canada (BHC) and some which were privately run. Of the 37 hostels, 16 were also university residences or conference centres (two being affiliated with HI) that only operated as hostels during the months of May to August when university students were no longer living on campus. These accommodations generally offered single or double rooms, sometimes in an apartment arrangement, with private or shared bathrooms, and perhaps a fridge or access to a guest kitchen. Although, in order to boost numbers, the researcher initially planned on including these hostels in the general hostel list, in conversation with managers it was found that either these facilities were not interested in being involved in the study, or they did not receive the type of travellers on which the study was focused. As a result, these 16 seasonal hostels were also excluded, leaving only 21 'real' hostels from which to develop a sample population.

During the proposal stage, it was anticipated that 20 Ontario hostels would be included in the sample, with 5 backpackers being surveyed at each one, thereby providing a final sample size of 100 respondents. However with only 21 applicable hostels in Ontario, this process had to be modified and eventually took the form of convenience sampling due to low interest from the first 12 randomly picked hostels. As a result, eventually all of the 21 hostels were contacted by phone, email or in person to provide information on the study, ask for their participation, and also their permission to survey backpackers on their property. Understandably, this type of method does not provide one with a random sample. Since the study focused on environmental sustainability and therefore required information on hostel practices with regards to the environment, it can be expected that the hostel managers that participated in the study already showed interest in this area and had already attempted to make their hostels more eco-friendly. Had other hostels been included that were less interested in environmental initiatives, it may have provided a more accurate picture of hostel sustainability within Ontario and Quebec. However, as accommodation was only one component of backpackers' ecological footprints, alongside many other influential factors, this possibly skewed sample of accommodation choices was not considered to be a major limitation to the overall assessment of backpackers' ecological footprint.

The list of hostel participants from Ontario remained very low (6 in total) compared to what had been anticipated, therefore the researcher eventually decided to contact several hostels in Quebec and again through convenience sampling, was able to include another 3 hostels to the study, thereby completing the sample list at 9 hostels. Including the Quebec hostels was a last minute decision due to the low interest that had been found with regards to Ontario hostels. As a result, the process of contacting them was not done in as methodological a way as it had been for the hostels in Ontario. The researcher compiled a short list of 15 Quebec hostels, which was probably not exhaustive, however the tourist season was fast approaching and the data collection process needed to begin. From that list, and through convenience sampling, three hostels were interested in participating, which brought the final number of hostels up to 9.

Had the researcher initially proposed to sample both Quebec and Ontario hostels, the process of finding interested hostels in Quebec would have undoubtedly been completed in greater depth and would have matched the sampling process in Ontario. Therefore, this simply acknowledges that the quick change in plans and the need to start distributing surveys resulted in these hostels being found relatively quickly, and in a rather superficial manner. It must also be noted that one manager was not comfortable with providing some of the hostel information, and after two pre-arranged hostel visits, during which no guests were found, this hostel was dropped from the study, bringing the final sample down to 8 hostels.

Although this type of sampling was not a best-case scenario, the final list of hostels did contain much variation with regards to size, setting and location, thereby still enabling a diverse sample of backpackers, both in terms of socio-demographics and itineraries (Table 3.1).

A relatively equal number of respondents was sought at each hostel, however numbers did vary according to backpacker availability, ranging from 3 to 28 depending on the number of backpackers available during surveying periods. Of the 131 surveys that were distributed to backpackers, 123 were returned and usable, indicating a very high response rate of 94%. Most surveys were distributed and completed in close proximity to the researcher, to ensure a high response rate, and to enable clarification over questions and help with translation issues. As such, the researcher travelled to, and sometimes stayed at, participating hostels. The one exception lay with a hostel that was 1500 kilometers away, however the manager kindly distributed the surveys himself and then mailed them back to the researcher for analysis.

Similarly to the hostel sample, the backpacker survey portion of the study was also conducted through convenience sampling by approaching backpackers in shared areas of the hostels, such as common rooms, lobbies or kitchens after gaining permission from the hostel manager. Although convenience sampling was not ideal, the attributes of the backpacker population are widely varied and as many travel independently, it was very rare that even two backpackers sharing the same room had identical socio-demographic characteristics and traveling plans. As such, this method still allowed for considerable, and satisfactory heterogeneity within the study sample.

It was anticipated during the proposal stages that the sample would only include backpackers who were travelling for more than 2.5 months; the boundary that is believed to separate real backpackers and those who like to travel in the same manner but within their work breaks (Sorensen, 2003). In addition, only international backpackers were initially considered, due to anticipated confusion over how to distinguish between domestic youth travellers and domestic backpackers. However, both of these decisions were soon disregarded, as most of the hostel tourists were travelling as short-term backpackers, and there were no noticeable differences between the travelling behaviours of international and domestic backpackers, who also travelled on small budgets, socialized with other travelers and maintained flexible plans. In addition, many of the international respondents were in the process of travelling domestically when the surveys were conducted.

Without these regulations, the surveys were eventually distributed with no discrimination towards age, gender, nationality, length of travel or size of travelling group. The one exception lay in the requirement of respondents to have some understanding of English in order to complete the survey. The researcher surveyed not only backpackers, but also older couples traveling on a budget, families (with the exclusion of minors), couples and older single travelers. Therefore, although many of the respondents were backpackers, several were simply using hostel accommodations due to the cheap costs, and would therefore be better defined as simply "hostel tourists".

One can question the difference between these two groups, and it appears to lie more in the social aspect rather than in demographics. From the surveys, it was unclear whether respondents were 'backpackers' or a 'hostel tourists' and as a result, the distribution of each type could not be provided in this paper. However, one must remember that backpackers are generally defined by the social culture of the market. These types of respondents generally had few plans or ideas about where they were heading or how long they would stay in each area. In addition, they embraced the social component of backpacking by taking part in evening activities and joining up with fellow travellers for social activities or possibly even for a portion of their trip. Some could be identified through their appearance and conduct, especially those who carried their belongings in backpacks, while others were identified by their aspiration to develop 'road status', through comparing travelling experiences and telling stories of their journeys, in an attempt to gain the respect of fellow travellers.

In comparison, regular 'hostel tourists' usually had concrete plans and travelling times, suitcases as opposed to backpacks, and although they may have interacted with fellow travellers, they generally tended to stay on the outside of the hostel's social circle, preferring to do their own thing, or enjoy time with their partners or families. Since this research focused on the environmental sustainability of the backpacker tourism lifestyle rather than backpacker tourists themselves, although these individuals may not have referred to themselves as 'backpackers', they were also included to gain a better understanding of the tourist market found in Ontario and Quebec hostels. As a result, throughout this paper, respondents will be interchangeably referred to as backpackers and hostel tourists.

3.2.2 Location and Timing of Data Collection

This research was conducted from June to September, 2007, a peak season for backpacker tourism in Ontario and Quebec. The study took place in various areas of these provinces, however most research was centered around the major tourism destinations of Toronto, Ottawa, Montreal and Quebec

City (Table 3.1). As the number of hostels in Ontario and Quebec are limited in numbers, exact locations are not provided, in order to maintain confidentiality over sensitive hostel information. Completing the backpacker and accommodation surveys usually required two visits per hostel, however when this entailed substantial travel from the researcher's home, the researcher stayed in the area, sometimes at the hostel, in order to be more efficient in collecting data. The multiple visits also enabled the researcher to gain a better understanding of hostel environmental sustainability levels, and to verify survey information through qualitative methods such as participant observation and discussions with fellow guests.

Although this study was initially planned to include international or Western Canada hostels, Ontario and Quebec were eventually chosen as the research locations for several reasons. Firstly, as an international study would have required more funding, studying local hostels was deemed more feasible simply due to the smaller travelling distances and therefore the ability to save on accommodation costs. Secondly, language or cultural difficulties were expected to be less of an issue with hostel managers in Ontario and Quebec where English is generally well spoken and understood. As a result, it was perceived that accommodation information would be more easily obtained. Lastly, it was envisaged that, since Ontario is one of the top choices for tourists visiting Canada (Canadian Tourism Commission, 2005), occupancy rates would be high, thereby increasing the chances that a sufficient number of surveys would be completed.

TABLE 3.1 STUDY SAMPLE DISTRIBUTION

Hostel #	Location	Setting	Number of Beds	Number of Respondents
1	Ontario	Suburban	24	3
2	Quebec	City	252	28
3	Quebec	City	78	11
4	Ontario	City	45	19
5	Quebec	City	263	20
6	Ontario	Rural	20	15
7	Ontario	City	190	15
8	Ontario	City	180	20
Total				131

3.2.3 The Backpacker Survey

In order to collect the required information for ecological footprint calculations in an efficient, yet detailed manner, a survey was developed and distributed by the researcher at all but one hostel, as

indicated previously (Appendix 5, 6, 7). The survey method was chosen due to its ability to collect a large amount of data from many respondents in a relatively easy manner. In addition, due to its ability to identify characteristics of a large population based on those of a small group of individuals, it enabled some generalizations to be made regarding backpacker tourism and sustainability in Ontario and Quebec (Creswell, 2003). Furthermore, since backpackers are generally on-the-go type of travellers, and it was assumed they would not want to spend much time answering questions, the survey was designed to be easily completed in approximately 10 minutes, thereby requiring little time commitment from respondents. Although the quantitative design of these surveys provided a relatively weak understanding of backpacker tourism, the ecological footprint calculator is only able to include numerical characteristics and facts, and as such, this flaw was not deemed to be an issue.

Before the backpacker and hostel surveys were distributed, they were pilot tested with 10 of the researcher's friends and family members (Appendix 1). An international, relatively well-traveled group of pilot testers, including Australian, British, South African, Canadian and American individuals, was sought in order to gain foreign perspectives, ensuring the questions were understandable by a variety of people. The initial pilot test did expose several minor issues with wording, which were revised and re-checked before being distributed to the sample.

The researcher administered the surveys personally, as it was assumed this method would result in a higher overall response rate; an assumption that proved true. In addition, by distributing the surveys in person, backpackers were able to gain a better understanding of the study (see backpacker letter in Appendix 3) and have questions clarified where needed. The researcher assisted with translation issues and sometimes administered the survey orally when written English was not understood. Through discussing the study, the respondents were also able to see that the researcher was of a comparable age, possibly with a similar education level and with a similar attitude towards backpacking and travelling. This connection based on like characteristics placed the researcher and backpacker on relatively equal grounds, thereby making the surveys seem less formal and intimidating to respondents, which eased with their completion.

The backpacker survey was mostly designed to gather quantitative data. However some qualitative information was required for describing activities in which respondents had taken part, in order to familiarize the researcher with the activity and enable more accurate land requirement assessments. Backpackers spending time in shared areas of the hostel for reading, socializing or activity purposes were approached by the researcher after gaining permission from the hostel manager. The

researcher gave a brief description of the study, the purpose of the surveys and requested their participation, which was almost always provided. From a predetermined list of options hostel tourists were required to identify their socio-demographics, the frequency of certain environmental behaviours and the level of concern for the environment. In addition, they were asked to fill in their hostel length of stay, their origin and destination, travelling methods and distances, food services and activities. Where backpackers had just arrived, they were asked to complete the survey according to how they thought their stay would materialize. When surveys were completed and collected, respondents were provided with a small Canadian token of appreciation that fitted well into backpacks. These ranged from pens to foam footballs, bendable frisbees, key chains and decks of cards. Although small and relatively insignificant, these small Canadian souvenirs were well received by respondents.

3.2.4 The Hostel Survey

As accommodation was an intricate component of backpackers' ecological footprints and a definite contributor to ecological resource requirements, detailed information on sample hostels was required. In order to collect the information needed for ecological footprint calculations, a quantitative survey was designed, to be used in conjunction with a qualitative questionnaire (Appendix 2, 3, 4). It was hoped that the survey and questionnaire would be filled out by the researcher during a brief and informal interview with hostel managers however, this was not always possible due to managers' time constraints. Understandably, the summer months are a peak tourist season, and several managers balked at the idea of having to schedule an interview, especially as it required them to locate certain information beforehand. They were however, generally enthusiastic about completing the survey and questionnaire on their own time and either leaving it for the researcher to pick up, or meeting with the researcher briefly to discuss answers and provide clarification.

Therefore, after the survey had passed the pilot tests mentioned previously, and after managers had agreed to participate in the study, they were emailed the survey and over the summer period were provided with as much time as needed to locate the data and complete the questions. To ensure privacy, throughout the study and on the surveys, hostels were provided with identification numbers to use instead of names. Hostel managers were required to provide information relating to hostel capacity and size, occupancy rates, and the amount of electricity and natural gas used per month for the year leading up to the study. They were also asked to estimate the size and number of waste containers along with how full they were when collected and how often collection occurred. The last quantitative section required them

to indicate the environmental behaviours practiced by the hostel, such as recycling, the use of energy efficient and natural products, and composting.

The qualitative section consisted of several open-ended questions, enabling hostel managers to provide their insight and perspectives on backpacker tourism as it relates to sustainability. Here, among other aspects, they were able to provide ideas for furthering sustainability in the backpacking sector and indicate what barriers they faced when trying to make their hostels more eco-friendly. This qualitative data provided ideas for discussion in the realm of backpacker sustainability, and also enabled further understanding of the quantitative results. Where the researcher was not able to meet with hostel managers after the surveys had been completed, due to time or distance constraints, clarification was sought and provided usually by email or phone.

In addition to the survey and questionnaire, the researcher typically visited each hostel for 1-2 days during the research period. These tours provided an opportunity to verify survey results and observe hostel staff in terms of their environmental behaviours. Notes were recorded on aspects such as excessive light usage, air conditioning being used where fans would have been acceptable, signage and placement of recycling bins and the overall environmental 'feel' and evaluation of the hostel. Although this type of information was usually aligned with that provided in the surveys and questionnaires, these tours proved to be generally worthwhile to complement survey knowledge, in either a positive or negative manner. After hostel and backpacker surveys were complete, hostel managers received a letter of thanks, along with a token of appreciation in the form of a researcher-recorded CD of 'green' songs.

3.2.5 Data Manipulations for the Ecological Footprint

The surveys proved useful in gaining the needed information, however the data collected were not always in the format required for ecological footprint calculations. For instance, with regards to food, respondents were prompted to fill in the number of servings consumed, when the EF calculator actually required food measurements to be in pounds. Although it would have been helpful for data to be collected in the required formats, it would have been unrealistic to expect respondents to know how to convert their answers into the preferred measurements. As a result, numerous manipulations had to be performed on the collected data before it could be inputted into the ecological footprint calculator. In addition, all data had to be converted to monthly equivalent amounts in order for the calculator to determine the annual ecological footprint based on the intensity of the traveling lifestyle. Therefore, if a respondent drove 200 kilometers for a 5-day stay, this was inputted into the calculator as 1200 kilometers

per month. The remainder of this section will discuss the various manipulations completed for each EF component and will provide information on how the researcher located conversion rates and other needed data.

3.2.5.1 Transportation

The data measurements required for the transportation component differed according to the vehicle used. Air travel for instance, had to be entered into the EF calculator in hours, which appeared relatively simple. However, many respondents also included layovers in their flight times, during which flight emissions were not actually being produced. If these layover times had been included in the EF calculator, they would have produced an inaccurate representation of transportation impacts. Therefore, flight hours were rechecked and modified according to those on the Official Airline Guide [OAG] travel information website (OAG, 2008). OAG is a U.K.-based global flight information and data solutions company, which maintains a large database of worldwide flight information and provides the shortest flight times between destinations (OAG, 2008). Although respondents' flights may not have always corresponded with these shortest possible flight times, in keeping with ecological footprint policies, these minimum values, if not accurate, would have underestimated air travel impacts and overall footprint size.

In addition to checking flight times, time was also added for travel to and from the nearest airports, as many respondents did not provide this extra information. The researcher determined airport distances from city centres, and the type of public transportation available through searching airport websites and MapQuest (MapQuest, 2007) or through the use of Internet search engines. Although respondents may have travelled to the airports from locations other than the city centre, these distances at least accounted for some of this travelling, and since relatively small, they probably did not overestimate traveling impacts. Where possible, bus and train were chosen to be the modes of transportation to and from airports, due to backpackers' preferences for budget travel and due to their lower ecological requirements, thereby underestimating resource requirements where not entirely accurate. In essence a respondent's total flight time was determined in a manner similar to the following:

> Travel from London, England to a Toronto hostel:
> Distance from London to Gatwick Airport – 28 miles (coach or commuter train)
> Flight from Gatwick to Toronto Pearson Airport – 8 hours (economy class)
> Distance from Toronto Pearson to Downtown Toronto – 17 miles (coach)

Calculating ground transportation was also very time consuming. In this case, respondents were asked to record hours or kilometers, and in most cases, hours were provided. Again these hours proved to be slightly inaccurate, since driving time greatly depends on the speed at which one travels and the number and length of driving breaks. Therefore, distances were checked or re-calculated according to those suggested by MapQuest (2007). Although MapQuest distances may not always be correct, the first few distance calculations were compared with those of the Official Road Map of Ontario (2008), produced by the Ministry of Transportation. Since the calculations from both sources were found to be similar, MapQuest was used for the remainder of time, simply due to the ease with which distances could be calculated.

Bus and train travel was easy to input, as it was simply required in the form of total miles travelled per person per month. However, calculating the impacts of car travel was slightly more complex, requiring the number of miles per person, along with the fuel efficiency of the vehicle. In the survey, respondents were prompted for the distance travelled in hours or kilometers, in combination with the type of car, the model year and the number of people with whom the car was shared. Driving distance was divided between the number of people travelling in the car, and vehicle fuel efficiencies were determined from a website produced by the U.S. Department of Energy, (United States Department of Energy, 2007) which provides fuel economy ratings for passenger cars and trucks from 1985 to the present.

The fuel efficiency values used represented a combination of highway and city driving, and where several vehicle options were provided, the average fuel efficiency was calculated. In the case of taxis, the fuel efficiencies of the Crown Victoria, Chevrolet Malibu, Chevrolet Impala and Lincoln Towncar were averaged to estimate a taxi fuel efficiency of 20 miles per gallon. For rental cars or where the car make was unknown, the researcher averaged the fuel efficiencies of several prevalent, economy-sized cars such as the Chevrolet Cobalt Accent, Toyota Yaris and Ford Focus, to reach a fuel efficiency of 26.7 miles per gallon. If respondents were not able to provide the vehicle year, the most recent year (2006) of that particular car was used, with the acknowledgement that recent technological improvements may have resulted in increased fuel efficiency and possibly smaller transportation impacts than those actually produced by respondents. It is also noted that these fuel efficiencies are based on ideal conditions, and that they could differ considerably depending on factors such as driving style, tire inflation, wind resistance, idling, road congestion, and speed of travel. As a result, they may not be accurate but indicate a ‘best-case’ scenario, thereby continuing with the ecological footprint’s tendency to underestimate impacts (Wackernagel & Rees, 1996).

3.2.5.2 Accommodation

Most information collected on hostel surveys required some form of manipulation to be converted into EF-friendly measurements. The size of the building and property was required to be inputted into the ecological footprint calculator in square feet per person. Therefore, the hostel sizes indicated in the surveys were divided by the average number of hostel guests, which in turn was derived by multiplying the occupancy rates by the total number of beds. These calculations resulted in the number of square feet of both built hostel space and hostel property allocated to each backpacker. The calculator also requested the weight of wood used in the construction of the building. Due to the perceived difficulty in locating this information, as well as the fact that several of the older buildings were constructed of stone rather than wood, this section was not included in EF calculations. Had it been included, it can be expected that the sizes of hostel ecological footprints would have increased.

Several energy calculations were required as, although given the option to record usage in kilowatts (electricity) and m^3 (natural gas), most hostel managers provided monthly or annual energy costs. As the study took place over the summer period and costs varied per month, the researcher used the average energy cost for June, July and August, and where costs covered more than one month, converted them into monthly amounts. Electricity amounts for Ontario and Quebec hostels were determined from Hydro One (2007) and Hydro-Quebec (2007) respectively. For Ontario hostels, the electricity amounts were determined according to those under 'Urban Density'. The first 750 kWh per month were charged at 5.3 cents/kWh, and thereafter, charges were 4.79 cents/kWh. In addition to these charges, there was a fixed charge of $15.79 per month, a volume regulatory charge of 6.2 cents/kWh, a debt retirement charge of 0.7 cents/kWh, and tax. For Quebec hostels, monthly electricity charges were composed of a $12.33 fixed amount, 8.47 cents/kWh for the first 15090 kWh, 4.31 cents/kWh thereafter, and tax. Based on these numbers, electricity costs were transformed into monthly kWh usage. This amount was then divided by the number of hostel guests, and the final number in kWh/person/month was inputted into the ecological footprint calculator with the respective electricity breakdown. For Ontario, this was found to be 54% nuclear, 22% hydroelectric, 16% fossil fuels and 8% alternative energy (Independent Electricity System Operator [IESO], 2007). For Quebec however, the numbers were substantially different at 96.4% hydroelectric, 2.8% nuclear, 0.2% natural gas and 0.7% heavy fuel oil (Stats Canada, 2005).

Natural gas calculations took a similar form and were determined from GazMetro (2007) for Quebec hostels and Union Gas (2007) for Ontario hostels. Gas charges for Ontario differed depending

on location, however, based on cents/m^3 they included a gas commodity rate and charges for gas price adjustments, transportation, storage, delivery and delivery price adjustments. In addition, there was a fixed monthly amount and tax (Union Gas, 2007). For Quebec hostels, similar fees were in effect but were consistent throughout the province. Monthly bills included cents/m^3 charges for supplied gas, compressor fuel, transportation, load balancing, inventory related adjustments and distribution (GazMetro, 2007). The actual amounts for each province can be found on the GazMetro and Union Gas websites, however the charges used during this study have now been amended to take into consideration the 2008 updates. Once the monthly gas usage was determined for each hostel, it was divided by the number of hostel guests that month to determine the kWh/person/month value. This amount had to be further converted into therms, which was based on a ratio of 1 m^3 = 0.364 therms. This conversion was calculated through the following process:

1 ft^3 of natural gas = 1,087,200 joules = 0.0283 m^3
1,087,200 joule = 0.0103 therms (U.S.)
0.0283 m^3 of natural gas = 0.0103 therms (U.S.)
1 m^3 of natural gas = 0.364 therm (U.S.)

3.2.5.3 Food

Food consumption was provided by respondents in terms of the number of servings, as prompted in the survey. However, since the ecological footprint calculator required values to be inputted in pounds or quarts, the number of servings indicated were multiplied by conversion rates, based on equivalency measurements from the United States Food and Drug Administration [USFDA] (USFDA, 2007) (Table 3.2). These in turn were converted into monthly amounts. For instance, 3 servings of pork in 5 days would have been equivalent to 2.16 pounds/month. Where food groups were combined, or several options were provided, an average weight or capacity was calculated. It was apparent from the surveys that many respondents had underestimated their food servings, possibly due to the time required to fill in the information accurately, or confusion over where certain foods were to be recorded and how to estimate servings. As a result, the ecological footprint of food consumption was possibly largely underestimated.

TABLE 3.2 FOOD CONSUMPTION CONVERSION RATES

Item Consumed	EF Measurement Required	Conversion Factor
Veggies, potatoes, fruit	Pounds	0.26
Bread and bakery products	Pounds	0.12
Flour, rice, noodles, cereal products	Pounds	0.26
Beans	Pounds	0.19
Milk, cream, yogurt, sour cream	Quarts	0.17
Ice cream, frozen dairy	Quarts	0.13
Cheese, butter	Pounds	0.05
Eggs	Number	none
Pork	Pounds	0.12
Chicken, turkey	Pounds	0.3
Beef	Pounds	0.3
Fish	Pounds	0.25
Sugar	Pounds	0.01
Coffee, tea	Pounds	0.01
Juice, wine	Quarts	0.25
Beer	Quarts	0.25
Cigarettes	Pounds	0.0022

Source: United States of America Food and Drug Administration Code of Federal Regulations (2002)

3.2.5.4 Activities

There were few data manipulations required for backpackers' activities simply due to the limited extent to which impacts could be calculated. Respondents were asked to provide qualitative information on up to four different activities, regarding activity name or type, a brief description of the activity and the frequency with which the activity was performed during their hostel stay. The researcher did not watch backpackers participating in these activities, however extra information such as activity costs and travelling requirements was collected through further discussions with backpackers or Internet searches. Due to the variation in activities, it would have been too time consuming and complex to determine the exact ecological resource requirements of each tourist's activities. Certain activities such as hiking, biking or swimming had few or no environmental impacts, and were therefore difficult to quantify in terms of ecological requirements. Major attractions, on the other hand, such as the CN Tower, the Museum of Civilization and History and the Biodome in Montreal incorporated large amounts of built space, and would have used immense amounts of energy and materials in their construction and maintenance. However, if one considers the number of visitors these attractions receive per year, the per capita share of these impacts and resource requirements could be very small.

Where applicable, the researcher accounted for the travel to and from activity locations, in the same manner as tourists' arrival and departure transportation. The distance to activity locations was discovered through MapQuest (2007), and transportation modes and fuel efficiencies were determined through further discussions with respondents, Internet searches and the United States Department of Energy's (2007) fuel ratings website. The activity transportation impacts were added to those of respondents' arrivals and departures and any entrance fees or activity costs were included in the Entertainment section, which assumes the energy costs of all types of entertainment to be 6MJ/$ (Redefining Progress, 2003). Reducing activity impacts to a simple dollar value, and only accounting for their fossil fuel consumption may have provided a rather inaccurate representation of the contribution of activities to respondent's ecological footprints. Therefore, the resource requirements for activities in this study should not be seen as absolute values, rather, they represent an attempt to capture some of the impacts of respondents' activities, with the acknowledgement that resource requirements are underestimated.

3.2.5.5 Waste

Determining the amount of waste produced by each respondent in this study was a complex task given the variety in hostel and guest waste management practices. The ecological footprint calculator required waste to be expressed in pounds, and only allowed for paper and paperboard, aluminum, other metal, glass and plastic. It was unrealistic to expect backpackers to accurately recall and measure the amount of waste they generated on a daily basis. As a result, EF waste contributions were calculated as a sub-component of accommodation, thereby allotting all hostel guests with an identical monthly waste generation measurement. Although this method of calculation was not ideal since waste production would have differed among individuals, it was the most practical option for the research timeframe, and enabled the researcher to at least capture the ecological impacts of hostel and guest waste generation.

On the survey, hostel managers were requested to estimate the size and number of waste containers in their facility, how full they were when collected and the frequency with which they were emptied. To provide consistency, hostel managers were provided with images of five different container sizes from which to choose, with capacities and maximum weights ranging from 12 to 96 gallons, and 20 to 180 pounds respectively. This information was readily provided however, the challenge lay in determining the average weight of a full bag of waste, since using the maximum weights could have overestimated the waste component. The researcher weighed several full garbage bags of different sizes, however the variety in contents provided no measurement consistencies. According to Statistics Canada

(2005) though, the average person in 2002 discarded 383kg of waste, which equaled 30 regularly sized, full garbage bags. By these measurements, one full garbage bag of a regular size was estimated to be 28 pounds. As garbage bags come in several sizes larger than 'regular', the researcher associated this measurement with the large waste container (32 gallons) on the hostel survey. Based on the ratio of 28 pounds to 32 gallons, the average weights for the other waste containers were determined, which ranged from 10.5 pounds for the 12-gallon to 84 pounds for the 96-gallon. Using these figures, and through the information that hostel managers had provided on the survey, the amount of garbage per month for each hostel was calculated.

The ecological footprint calculator also requested the amount of each type of waste that was recycled each month. In order to ease the already complex calculations, an average recycling rate of 35.6% was calculated from the individual diversion rates for hostel locations, ranging from 42% to 28% (Owram, 2007; Ministry of the Environment, 2004; the Clear Network, 2006). This average diversion rate was then added to the monthly garbage amount, resulting in the total amount of waste produced per month by each hostel. To determine the individual amounts of each type of required waste, the waste composition breakdowns from the 2004 Ontario Waste Report (Ministry of the Environment, 2004) were utilized. The average waste composition, calculated from the Residential, and Industrial/Commercial & Institutional breakdowns was determined as 23.5% paper, 2.4% aluminum, 4.6% other metal, 5% glass and 3.5% plastic. By multiplying these amounts by the total monthly waste and dividing the answers by the number of hostel guests, the monthly per capita weight of each type of waste was determined and added to the ecological footprint calculator, with a 36% diversion rate for all waste materials.

Whether these waste calculations were accurate in describing the waste impacts of backpacker tourists remains unknown. There are obviously numerous types of waste that were not accounted for, and of those that were included, diversion rates may have been higher or lower than the estimated 37%. As such, this method of determining waste impacts is certainly not perfect, however it is hoped that these calculations may have at least accounted for some of the waste produced by guests. Of course, there is also the possibility that waste amounts were overestimated. However, as described in the next section, the average waste contribution to backpackers' ecological footprints was relatively small. As such, an overestimation would have still been relatively insignificant alongside the more influential transportation impacts.

3.2.6 Ecological Footprint Calculations

The ecological footprints of backpacker tourists in this study were determined through the Household EF Calculator version 3.2, produced by Redefining Progress (2003) (Appendix 8). This calculator was originally designed for individuals of a household to assess their ecological resource requirements and their consumption impacts, in order to determine where changes could to be made to decrease their household ecological footprint. Through the detailed inclusion of separate accommodation, transportation, food, and goods and services components, this spreadsheet calculator, with a few modifications, was well suited for use in a tourism context. Designed in the United States, this calculator uses North American data (conversion, yield and equivalence factors) in its formulas, which must be acknowledged when comparing results between North American studies and those from other areas.

Through the detailed inclusion of backpacker data, this calculator determined individual ecological footprints. It also summarized the ecological footprint breakdown into food, accommodation, transportation, activity and waste components, in both absolute values and percentages (Table 3.3). This provided an indication of each component's individual environmental impacts, and where changes needed to be made to decrease one's footprint size. Further detail was provided with regards to each component's individual resource requirements from six main areas, being fossil energy, cropland, pastureland, forest, fisheries and built up land. For instance, in the example below, 83% of the footprint is derived from fossil energy, 3% from cropland, 1% from pasture, 4% from forest, 6% from built up land and 2% from fisheries. Clearly, transportation is the largest contributor to this ecological footprint, requiring 78,065 m^2, of which 71, 662 m^2 are derived from fossil energy area and 6,403 m^2 come from built up land. The remaining footprint costs are comprised of food (9,726 m^2), housing (1,989 m^2), activities (3,631 m^2) and waste (9,371 m^2) to total an ecological footprint of 102, 782 m^2, which equates to 10.27 global hectares or 25.4 global acres. Results such as these were analyzed with SPSS, and will be further detailed and discussed in the next section.

TABLE 3.3 EXAMPLE OF AN ECOLOGICAL FOOTPRINT BREAKDOWN (gm^2)

Categories	Fossil Energy	Cropland	Pasture	Forest	Built-up land	Fisheries	Total gm^2
Food	3,202	3,483	788	0	0	2,254	**9,726**
Housing	1,560	0	0	392	37	0	**1,989**
Transportation	71,662	0	0	0	6,403	0	**78,065**
Activity	3,487	32	0	0	112	0	**3,631**
Waste	5,340	0	0	3,951	80	0	**9,371**
Total	**85,250**	**3,515**	**788**	**4,343**	**6,632**	**2,254**	**102,782**

Categories	Fossil Energy	Cropland	Pasture	Forest	Built-up Land	Fisheries	Total
Food	3%	3%	1%	0%	0%	2%	**9%**
Housing	2%	0%	0%	0%	0%	0%	**2%**
Transportation	70%	0%	0%	0%	6%	0%	**76%**
Activity	3%	0%	0%	0%	0%	0%	**3%**
Waste	5%	0%	0%	4%	0%	0%	**9%**
Total	**83%**	**3%**	**1%**	**4%**	**6%**	**2%**	**100%**

3.3 Limitations of the Study

Due to a relatively small sample size, the results of this study cannot be generalized to Canada's entire backpacker population, or that of any other country. The results may apply to Ontario and Quebec's backpacker market, although this too is limited due to the heterogeneity in backpacker socio-demographics and traveling behaviours. Since ecological footprints vary considerably based on, among other factors, the distance travelled, the length of stay and the mode of transportation, one cannot assume that other backpackers in Ontario and Quebec will have similar footprints as the respondents in this study. However, it is possible that many backpacker footprints will at least fit within the very broad range discovered in this study, which was as a result of the varied behaviours, characteristics and traveling itineraries of respondents. The process and methods with which data were collected for this study may not have perfectly captured backpackers' impacts on the environment. For instance, as respondents were required to complete their own surveys, an accurate representation of the backpacker population under study may not have been provided, as was the case with the food component where it appeared that respondents often underestimated their consumption.

There are also limitations associated with the information provided in the study, or in how it was provided. For instance, implications may have arisen as a result of the researcher administering the

surveys personally and participating in informal discussions with the respondents in regards to their travelling experiences, plans and ideas. It is certainly possible that as a result of these discussions, respondents may have slightly altered their answers, however this scenario is highly unlikely given the objective quality of the questions. Rather than pose a threat to the study's validity, these social conversations expressed to respondents that the researcher was genuinely interested in their travels, and was 'just a student' attempting to fulfill degree requirements (like many of themselves), and learn about the backpacker industry. Furthermore, the conversations gave respondents a chance to ask questions about the area and gain ideas for places to visit during their holiday. Therefore, through the social conversations, the surveys simply appeared as a social, learning opportunity for respondent and researcher, rather than a tedious, intimidating chore.

There were also limitations that could have arisen from the ecological footprint details provided to the backpackers in the initial information letter. The researcher provided this information in an attempt to indicate to respondents how their information would be used and what purpose it would serve. It was assumed that few respondents would be aware of the ecological footprint method, and therefore information was provided on the fair earth share values and the inequality currently seen in many areas of the world. From this information is it certainly possible that respondents may have underestimated their answers in an attempt to distinguish themselves from mass consumers and therefore generate a smaller ecological footprint. However, as few respondents were interested in reading the letter, this scenario is highly unlikely. Although the letter was always provided, most respondents simply filled out the survey and handed both letter and survey back to the researcher without much concern over what the information would be used for or its implications. Therefore, although this letter could have acted as a limitation in the study, it did not actually prove to be an issue.

As indicated in the literature review, there are also many limitations associated with the ecological footprint concept in itself. Due to its global nature, the ecological footprint could not determine the local environmental impacts of backpackers in Ontario and Quebec. Had arrival and departure transportation been excluded, one could have discovered their average destination footprint, however this would have still been in relation to global impacts and as transportation is a vital component of tourism, excluding it would have resulted in an inaccurate representation of tourism's consequences. In addition, the EF calculator only incorporated North American data in its formulas, and as a result, this study's findings cannot be directly compared with those of other countries, where formulas may have included different measurements. Furthermore, the ecological footprint assumes that all individuals have similar levels of consumption and waste generation. Although food, transportation and activity resource

requirements related to the individual, accommodation and waste impacts were shared equally between hostel guests, which obviously would not be the case in reality. Some respondents may have stayed in double or single rooms rather than dormitories and as a result, would have had a larger amount of per capita built space, and a larger ecological footprint. However attaining this level of individualism and detail was not possible with the current state of knowledge on this indicator, and as such, dividing these factors equally among the group was the best possible option.

The limited scope of the ecological footprint concept warrants acknowledgement as well, since it often results in an underestimation of one's ecological resource requirements (Wackernagel & Yount, 2000). As indicated by Refining Progress (2003), the ecological footprint does not indicate one's complete impacts on the environment. It can only account for the potentially sustainable parts of waste production and resource consumption that can be regenerated or disposed of in a biodegradable manner. Therefore, any unsustainable factors, such as heavy metals, bio-hazardous waste or toxins are not included in calculations, as the environment cannot readily handle them. Aside from these unsustainable products, there were numerous other potentially sustainable aspects, such as clothing, toiletries, luggage and souvenirs, that simply could not be included in this study due to time constraints and the perceived difficulty in gaining this information accurately. Furthermore, of the products that were included, the materials and energy needed for their production, transportation and disposal, termed 'embodied energy', could not be accounted for. All of these exclusions may have resulted in largely underestimated ecological footprints.

Lastly, as knowledge develops on the impacts of varied behaviours and products, the ecological footprint concept will continue to be updated, to provide a best-possible scenario for calculating ecological resource requirements. At the time of this study, the ecological footprint concept (EF 1.0) was undergoing major revisions due to newly acquired knowledge regarding resource requirements. This new Footprint termed Ecological Footprint 2.0, will provide a deeper understanding of humanity's impacts on the environment, by taking into account several factors not included in previous versions. For instance, EF 2.0 will include the entire earth surface, when estimating biocapacity, thereby taking into consideration open ocean area, and less productive land that ER 1.0 could not account for. In addition, it will reserve a portion of this biocapacity for other species and will take a different approach to carbon sequestration. Ecological Footprint 2.0 is also expected to use net primary productivity, defined as "the amount of energy remaining after subtracting the respiration of primary produces from the total amount of biologically-fixed energy" (Redefining Progress, 2005, p. 4), for determining footprint equivalence factors (Redefining Progress, 2005).

With this increased knowledge, the new ecological footprint paints an even more depressing image of the environment's current situation, stating that cropland and build space are not actually sustainable as previously assumed, and that humanity is currently overshooting the earth's biocapacity by 39%; double the figure calculated through version 1.0. Future ecological footprint studies incorporating this new information will have considerably different results to those produced in this study. For instance, under EF 2.0, the average per capita footprint is 22 gha, while bioproductive footprints are 16 gha. In addition, where Footprint 1.0 estimated Canadian and U.S residents to generate ecological footprints of 9.6 gha and 7.6 gha respectively, EF 2.0 calculates these footprints to be markedly greater, averaging 83 gha and 109 gha per capita. As a result of these changes, this study will not be able to be compared to future studies using the EF 2.0 methodology.

It was anticipated that the household calculator for Ecological Footprint 2.0 would be publicly released in time for this study, as it was projected to be fully developed by the Fall of 2007. However, through personal communication with Redefining Progress, it was discovered that the release date would be postponed indefinitely until sufficient resources allowed for its implementation. As a result, this study was not able to take advantage of this current knowledge or the new household EF calculator. Future research therefore, in the area of backpacking and sustainability should focus on reiterating this study within the new parameters of Ecological Footprint 2.0, to provide a more accurate assessment of the sustainability of backpacker tourism.

3.4 Ethical Considerations

Since the information in this study remained anonymous, this research posed little ethical threat to respondents. The voluntary nature of the surveys and interviews enabled backpackers and hostel managers to decline participation in the study if they desired, and to withdraw if they were uncomfortable providing information. With regards to those who did participate, names of backpackers, hostel managers or hostel names were not required, surveys were simply identified through a number indicating at which hostel the questionnaire was completed. Confidentiality surrounding sensitive information was assured to hostel managers, and for this reason, and since there are few hostels in Ontario and Quebec to begin with, the size, location and settings of hostels were only vaguely described.

Chapter Four

4. RESEARCH FINDINGS

4.1 Hostel Findings

The eight hostels included in this study varied greatly in size, location and environmental setting. Four of the included hostels were categorized as large, ranging from 180 to 263 beds. Of the remaining four, three were small with fewer than 50 beds and one was medium-sized with 78 beds. Six of the hostels were located in city settings, while two were in rural or suburban areas. Geographically, five hostels were located in Ontario, and three in Quebec.

The hostels mainly provided short-term accommodation for backpacker-type tourists, however, they also accommodated those looking for cheap long-term housing while taking part in school or work activities. Most guests were young, independent travelers following the 'backpacker' lifestyle in terms of limited budgets, socializing with other travelers and having flexible itineraries. In conversation with many of the respondents, the researcher discovered that most were on short 'exploration' holidays, and few were travelling away from home for more than a month or two. Although the average hostel stay was 12 days (mean = 12, median = 4), 50% of respondents stayed for 4 days or less, indicating that the high average was substantially skewed by the few people who stayed long-term; one of which stayed for 270 days for language study purposes. In addition to backpacker tourists, the researcher met several families with young children, older couples travelling on a budget and workers looking for a relaxed location where they could socialize in the evenings, indicating that these hostels welcomed a variety of travellers.

Hostels in the sample generally offered single-sex or co-ed accommodation in dormitories, ranging from three to twenty beds, or private rooms, housing one to four people, and possibly including en-suites bathrooms. Bedding was usually provided, however some hostels allowed travelers to use their own sleeping bags or charged for the use of hostel linens. Kitchen facilities were usually available for guest to use on a self-catering basis. Guests were expected to supply and cook their own meals and clean up after themselves. At certain hostels, breakfasts were included and sometimes meals could be bought from an in-house café. Laundry services or facilities were also available at certain hostels for a nominal fee. All hostels had social areas where guests could mingle, read, listen to music, have a few drinks or

play games. Most also provided bar facilities, and some hosted free evening activities such as pool tournaments, barbecues, kareoke, bingo or trivia. Several hostels also organized social activities for guests that took place outside the facility, such as group hikes, pub-crawls, or guided tours. These activities were usually free or available at a small cost. In the case of pub-crawls, hostels usually provided free transportation and a free guide, but guests were expected to buy their own drinks.

In general, hostel prices ranged from approximately $20 per night for a dorm bed to $70 per night for a private room with an en-suite bathroom. Dorm rooms could be crowded with little privacy or personal space, however a few were equipped with security features such as lockers for guests, or small safes for the storage of valuables. When considering usual hotel prices, the inconveniences of little privacy and security were readily accepted for $20 per night, especially when breakfast, a welcome drink, or free linen was included.

4.2 Demographic Characteristics of the Sample

4.2.1 Age and Gender

As expected, based on previous backpacker literature, the sample group was relatively young, with most respondents (65%) being between the ages of 21 and 29 years old (Table 4.1). A relatively large portion of the sample also consisted of 18 to 20 year olds (19%) and of the remaining respondents, 13% were between 30 and 39 years old, while only 3% were over 40 years old.

Males were slightly over-represented in the sample with a male to female ratio of 57% to 43%, and were found to be more prevalent in all age groups, although the differences in numbers were often small (Table 4.1). The only exceptions were found in the 18-20 and 30-34 year old categories where the number of males was considerably higher than the number of females. This difference could be due to males being more willing to travel independently at younger and older ages. However, as the numbers were small, it was more likely due to sampling conditions where males were perhaps more available or more willing to fill in surveys when the study was being conducted.

TABLE 4.1 AGE AND GENDER

Age in Years	Gender		Total	Percent
	Males	Females		
18-20	14	9	23	19%
21-24	22	20	42	34%
25-29	20	18	38	31%
30-34	8	3	11	9%
35-39	3	2	5	4%
over 40	3	1	4	3%
Total	70	53	123	100%
Percent	57%	43%	100%	

4.2.2 Occupation

The majority of respondents, when not traveling, were full time employees (50%) or students (42%). Very few were employed part time (3%), retired (1%) or unemployed (4%). As can be seen from Table 4.2, most respondents who were full-time employees or students were between the ages of 18 and 29 years old, with another 17 respondents over 30 years old also being employed full-time. The retired individual was over 40 years old, and those employed part-time or unemployed were mostly in the age category of 25-29 years old.

TABLE 4.2 AGE AND OCCUPATION

Age in years	Student	Full-time Employed	Part-time Employed	Retired	Unemployed
18-20	21	2	0	0	0
21-24	21	20	0	0	1
25-29	10	22	3	0	3
30-34	0	9	1	0	1
35-39	0	5	0	0	0
over 40	0	3	0	1	0
Total	52	61	4	1	5
Percent	42%	50%	3%	1%	4%

4.2.3 Money spent per day

There were large differences in the amount of money spent by respondents while staying in Ontario or Quebec hostels, however the average appeared to be approximately $35 per day (Table 4.3). Almost two-thirds of the sample spent between $26 and $75 per day (63%), with the majority of these individuals spending between $26 and $50 per day (40%). A relatively large number of respondents also spent from $76-100 per day (16%) and very few spent over $100 (2%), which is consistent with the view that hostel tourists are budget travelers. Surprisingly, 19% of the sample spent only up to $25 per day, however it is very likely that these individuals did not include accommodation costs into their daily amount, since dorm beds usually cost at least $20 plus tax per night. Unfortunately, the question was not clear as to whether accommodation charges needed to be included.

The majority of individuals who spent up to $50 per day were students, which may not be a surprise since most funds from home were probably used for tuition payments, thereby requiring them to keep to a strict budget while traveling. Conversely, the retired individual spent between $101 and $150 per day, probably due to splurging for a private, slightly more luxurious room. Since this individual was retired, he or she may have saved up enough money for this trip to be relatively comfortable while still enjoying the independence and socialization opportunities that the hostel offered. Surprisingly, the respondents who were employed full time before traveling also maintained tight budgets, generally spending less than $100 per day. Although they may have earned more than the student respondents, one cannot assume that this money would be freely available for travelling. These individuals may have still needed to budget their funds, possibly to cover homes, families, cars or other assets in their home countries.

TABLE 4.3 BUDGET AND OCCUPATION

Budget per day	Student	Full-time Employed	Part-time Employed	Retired	Unemployed	Percent
$0-$25	12	10	0	0	1	19%
$26-$50	27	19	0	0	3	40%
$51-$75	7	18	3	0	0	23%
$76-$100	6	12	1	0	1	16%
$101-$150	0	0	0	1	0	1%
over $150	0	2	0	0	0	2%
Total	52	61	4	1	5	100%

4.2.4 Nationality and Country of Residence

Since individuals in the sample represented many different countries, they were grouped into several categories to ease understanding (Table 4.4). Almost 50% of the sample was comprised of Europeans, with half of them being British. Other respondents were Asian/Middle Eastern (15%), Australasian (11%), Canadian (13%) or American/Mexican (11%). Only 3 individuals in the study were African or South American. Numbers slightly different with regards to respondents' countries of residence, however the pattern remained relatively similar with the exception that at the time of study, no respondents were residents of an African country. Mainland Europe and Britain again dominated the sample (24% and 22% respectively), followed by Canada (16%), America/Mexico (14%), Asia-Middle East (12%) and Australasia (11%).

As expected when studying backpackers staying at hostels, foreign travelers, particularly Europeans, dominated the sample. In Europe, hostelling is a very popular activity, however it appears to be less well known to Canadians, which could explain the smaller number of domestic respondents. The large number of European backpackers could be attributed partly to the low cost of travel between Canada and Europe with budget airlines such as ZoomAir, Fly Globespan and Canadian Affair offering very reasonable prices and enabling visitors to reach Ontario or Quebec within a few hours travel. On the contrary, the smaller numbers originating from Australia, New Zealand and countries in the Middle East and Asia, could have been limited by the high ticket prices, and the lengthy flights and layovers, both of which are relatively impractical for trips averaging 12 days in length.

TABLE 4.4 NATIONALITY AND COUNTRY OF RESIDENCE

World Area	Nationality	Country of Residence
Europe	24%	24%
Britain	24%	22%
Canada	13%	16%
America/Mexico	11%	14%
South America	1%	1%
Australasia	11%	11%
Middle-East/Asia	15%	12%
Africa	16%	0%
N	123	123

4.3 Environmental Practices of the Sample

4.3.1 Environmental Practices of Hostel Guests

Hostel guests were average in their environmental initiatives; they were neither overly concerned, nor ignorant regarding the practicing of environmental behaviours while on holiday. Recycling was the most common behaviour, and was practiced by three-quarters of the sample on a regular basis (Table 4.5). Other behaviours, however were more varied in their consistency. Only 5% always bought organic food, while 62% sometimes tried to reduce their waste and 54% sometimes supported environmental businesses. With regards to transportation choices, 45% always traveled by train or bus, and slightly fewer walked or cycled when possible. Considering the budget and social lifestyle of backpackers, one might have expected these numbers to be higher. In terms of storage and water, only 26% regularly used reusable containers, and only 40% drank tap water rather than bottled water while travelling. Almost two-thirds of the sample sometimes bought local food and environmentally friendly products (60% and 63% respectively), while the same amount never or rarely discussed environmental topics with fellow travelers.

TABLE 4.5 FREQUENCY OF ENVIRONMENTAL BEHAVIOURS: HOSTEL GUESTS

Environmental Behaviour	Never/Rarely	Sometimes	Always
Recycle Bottles and Cans	4%	20%	76%
Buy Organic Food	52%	43%	5%
Reduce waste	51%	17%	23%
Support Sustainable businesses	29%	55%	17%
Walk/Cycle over powered vehicle	10%	52%	38%
Use Train/Bus over car	14%	41%	46%
Use reusable storage containers	28%	46%	26%
Use tap water rather than bottled water	27%	35%	38%
Buy environmentally friendly products	29%	60%	11%
Buy local foods/products	17%	63%	20%
Discuss environmental topics	58%	41%	2%
N			123

When comparing means between the frequency of environmental practices and the respondents' levels of environmental concern, it was evident that environmental behaviours were practiced more regularly by those who were more concerned about the environment (Table 4.6). For instance, those who did not recycle were neutral in their environmental concerns (mean = 3.0), while those who always

recycled were more concerned (mean = 3.98). The difference in levels of concern was not always as large as indicated here and there were exceptions where environmental practices did not correspond to higher levels of environmental concern. However, in general there appeared to be a positive relationship between certain environmental behaviours and the corresponding mean level of environmental concern. The significance of this possible relationship was not tested due to insufficient numbers in each category, however this finding indicates that hostel travelers may need to be aware of, and concerned about environmental issues in order to increase the consistency and variety of their environmental efforts. Regardless of this finding, it is evident that the environmental practices of hostel tourists can be improved upon, possibly through educating them on the environmental impacts of their travels, or by simply enabling these behaviours to be more practical in terms of convenience and cost.

TABLE 4.6 ENVIRONMENTAL BEHAVIOURS AND THE LEVEL OF ENVIRONMENTAL CONCERN

	Mean Level of Environmental Concern		
Environmental Behaviour	**Never/Rarely**	**Sometimes**	**Always**
Recycle Bottles and Cans	3.00	3.13	3.98
Buy Organic Food	3.45	4.09	4.33
Reduce waste	3.26	3.78	4.11
Support Sustainable businesses	3.37	3.87	4.14
Walk/Cycle over powered vehicle	3.58	3.72	3.89
Use Train/Bus over car	3.47	3.80	3.84
Use reusable storage containers	3.71	3.72	3.94
Use tap water rather than bottled water	3.82	3.49	4.00
Buy environmentally friendly products	3.31	3.91	4.21
Buy local foods/products	3.52	3.79	3.92
Discuss environmental topics	3.55	4.08	4.00
N			123

4.3.2 Environmental Practices of the Hostel

On average, hostel managers were very concerned about the environment (mean = 4.4), even more so than were their guests (mean = 3.77). All hostels in the sample practiced environmental initiatives and encouraged their guests to travel in an environmentally friendly manner (Table 4.7). As expected, recycling was the most consistent eco-friendly behaviour among hostels. Composting was surprisingly low, considering it's an easy and relatively cheap environmental activity, however several hostels understandably cited rats and bears as being the main reasons for not installing a composting program. Energy efficient laundry machines and appliances, possibly with Energy star ratings, were

present in some hostels, however energy efficient light bulbs were not as common as expected, with few hostels using them consistently. Composting toilets were not found in any of the studied hostels, and limited electricity hours only occurred in the form of turning off reception lights during nighttime hours. Energy efficient showerheads were popular, however no hostels limited water use through coin or time operated showers. Locally made goods and foods, and vegetarian meals were offered to guests where possible by most hostels, however organic food was rarely purchased or served. Most hostels used natural cleaning products, but none consistently collected rainwater for use around the hostel. Most hostels supported environmentally friendly or sustainable businesses but few regularly purchased or generated renewable energy. Added insulation was not very common and was only used by two hostels on a somewhat consistent basis.

Through discussion with managers and through touring the hostels, other environmental practices not covered on the surveys were recorded, such as outdoor clothes lines, the collection of used batteries or guidebooks for recycling, limited laundry times, or the use of second hand furniture and recycled wood for furnishing hostel rooms. Air conditioning was not commonly found, however in the few hostels that did provide it, it was limited to certain areas. Signs were seen requesting guests to turn off lights and in some hostels, most lights were off during the day, or were on timers. However at several of the hostels visited, the lights appeared to stay on permanently in certain areas, even when guests were not present. Most hostels did not provide parking areas, but indicated where paid municipal parking could be found, thereby passively discouraging backpackers from arriving or departing by car.

TABLE 4.7 FREQUENCY OF HOSTEL ENVIRONMENTAL PRACTICES

Environmental Behaviour	Always	Sometimes	Rarely	Never
Recycling: Bottles/Cans	88%	13%	0%	0%
Recycling: Paper/cardboard	88%	13%	0%	0%
Recycling Plastic	88%	13%	0%	0%
Recycling: Other	0%	13%	0%	88%
Composting food scraps	0%	13%	25%	63%
Energy star appliances	25%	50%	13%	13%
Energy star laundry machines	25%	38%	13%	25%
Environmentally friendly light bulbs	38%	63%	0%	0%
Composting toilets	0%	0%	13%	88%
Limited electricity hours	0%	0%	38%	63%
Energy Efficient showers heads	63%	38%	0%	0%
Coin/time operated showers	0%	0%	0%	100%
Heat recovery drain pipe	0%	13%	25%	63%
Buy locally made goods/products	13%	63%	13%	0%
Buy/serve local food	13%	75%	0%	13%
Buy/serve organic food	0%	25%	38%	38%
Serve vegetarian meals	25%	38%	13%	63%
Collect rainwater for various uses	0%	0%	13%	88%
Encourage environmentally friendly travelling	75%	25%	0%	0%
Support environmentally friendly businesses	25%	38%	38%	0%
Use natural cleaning products	50%	38%	13%	0%
Renewable energy purchased or generated	0%	13%	25%	63%
Added Insulation	13%	13%	13%	63%
N				8

Note: Figures may not all add up to 100 due to rounding.

In most cases, the 'greenness' of a hostel was not overly apparent to guests or advertised on hostel brochures. Some hostels did display posters with green facts or environmental codes of conduct, however they were often hidden behind other objects or difficult to read. Similarly, signage on how to dispose of particular items, such as beer bottles, was often lacking or confusing, and recycling bins were not always easy to locate within the hostel. Some hostels did provide a ride share program where people could sign up in an attempt to carpool with other travellers to departure locations or a new destination, however this was usually done for cost rather than emission reasons. The use of environmental marketing was also rare, with only two hostels in the sample, both in Quebec, advertising their 'green' efforts on their websites. As it is not known whether the marketing of green hostel practices would

attract hostel tourists, it is understandable that they would rather advertise aspects such as low prices or hostel awards; features that have proven to be effective.

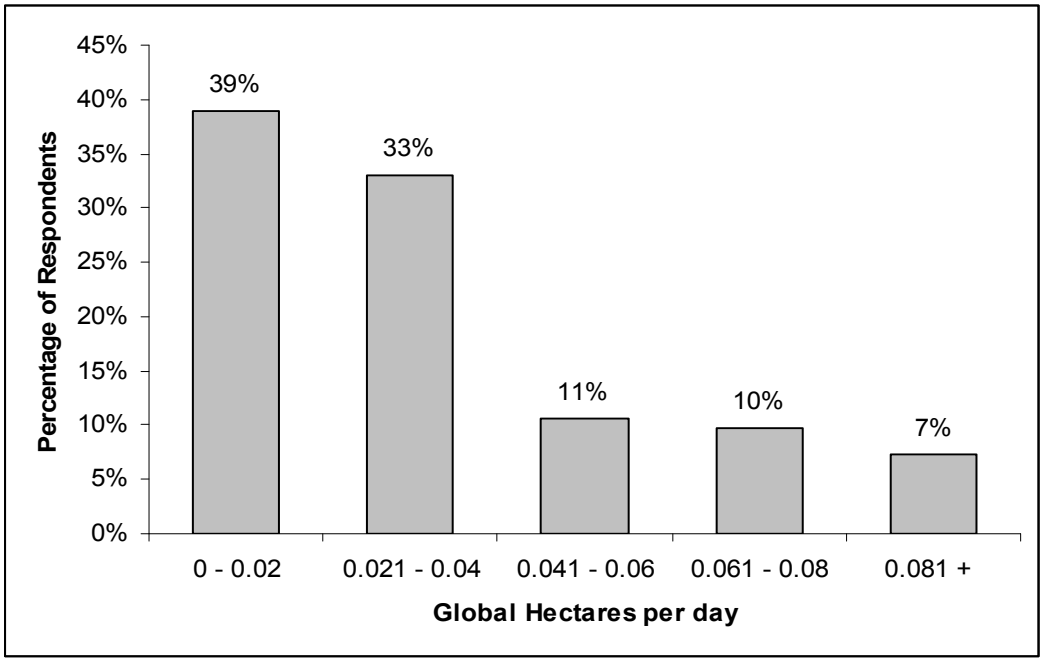
When discussing with hostel managers why certain environmental behaviours had not been adopted, many factors came into play. Time and money were cited as the main issues at all 8 hostels, with space availability (1), municipal permits and logistics (2), general lack of effectiveness (3), the type of clientele (1), the age or ownership of the building (2), and transport (1) also being cited as important variables by managers. In some cases, time and money were just not available, as indicated by a certain hostel manager who commented that "we are slowly changing our habits but it takes time and money that we don't have now". In the past when these resources were more available, they were often allocated for other areas. As stated by another hostel manager "trying to make the hostel 'greener' is not that easy. It takes money and even through it will … save money in the long run, there are other priorities sadly". According to a different manager, "the energy, time and money that you have to put in environmental projects stops [hostels] from being more environmentally friendly". Managers also indicated that travelers needed to change their habits to become 'greener' and that it took time to teach them. Further issues lay with the ownership of facilities. For instance, one owner wanted to increase the hostels' energy efficiency by installing solar panels and extra insulation, however, these changes were not possible since the hostel was located in a rented building. In another similar case, the hostel owned the building but did not own or manage the cafeteria and therefore could not prevent the use of disposable cutlery or crockery. A very thought-provoking point was made by one manager who stated, "we are sometimes lost [regarding] recycling products; for example you save energy by using environmentally friendly light bulbs, but you can't recycle those. Also, you have to wash the cans that you want to recycle, but you have to use a lot of water for that… isn't that a waste?"

On the hostel surveys, all but one hostel manager believed backpacking to already be an environmentally friendly concept due to its use of public transportation, shared accommodation and other efficient features. Regardless of their current environmental efforts and the barriers preventing them from adopting new eco-initiatives, all managers stated that there was potential for hostels to become more 'green' and that backpackers would be interested in learning about the environmental effects of their travels, and in turn becoming more environmentally friendly.

4.4 The Ecological Footprint of Hostel Guests

The ecological footprint of individuals in the sample varied between 0.001 and 0.36 global hectares per day with an overall average of 0.038 gha. It must be noted that the average EF could have been positively skewed by a few of the very large footprints, since almost three-quarters (72%) of the sample used equal to or less than 0.04 global hectares per day (Chart 4.1). Of the remaining individuals, 21% used between 0.041 and 0.08 global hectares per day, and only 7% used more than 0.08 gha daily. One individual in particular generated an ecological footprint almost 10 times the average due to their immense amount of travelling surrounding their one night stay in a Quebec hostel. Since this was an extreme case (0.36 gha/day) with the next highest ecological footprint being only 0.17 gha/day, and to gain a more typical picture of backpacker environmental impacts, this outlier was excluded from the remainder of the ecological footprint analysis, reducing the sample size to 122 and the mean ecological footprint to 0.035 global hectares per day.

CHART 4.1 THE ECOLOGICAL FOOTPRINT OF HOSTEL GUESTS



4.5 The Ecological Footprint and Demographics

The variation in daily ecological footprints discovered through this study could be attributed to a number of factors such as age, gender or money spent per day. This section will attempt to discover any

relationships between ecological footprint size and the sample's demographics, length of stay and level of environmental concern. As there was much variation in ecological footprints, it was not practical to analyze 122 individual footprints separately. Therefore, to ease understanding, the ecological footprints were divided into three separate categories of daily global hectares which are 0 – 0.02, 0.021 – 0.04, and 0.41 and larger.

To determine the strength of the relationships between the ecological footprint and other variables, crosstab values were derived and evaluated through a chi square test, to compare these values with those that could be theoretically expected given the sample's distribution. The chi square test is based on the null hypothesis, that there is no relationship between the ecological footprint and a separate independent variable at the 0.05 level of significance. Taking into account the degrees of freedom at the 0.05 significance level, (Rows –1) x (Columns – 1), the null hypothesis can be rejected if the strength of the relationship is higher than theoretically expected. For instance, in the case of age and the ecological footprint, the null hypothesis can be rejected if the chi square value exceeds 12.59 with 6 degrees of freedom (3 rows – 1) x (4 columns – 1). If this occurs, it can be stated that there is a level of significant dependence between the variables and therefore a significant relationship. As the number of degrees of freedom increases, so does the value needed to reject the null hypothesis. Through this method, the chi square test provides an indication of relationship between an independent variable and the ecological footprint.

4.5.1 Age and the Ecological Footprint

There was some variation between age groups in the sample with regards to their mean daily ecological footprint (Table 4.8). The 18-20 year old group had the lowest average ecological footprint at 0.028 global hectares per day, while that of the remaining age groups were higher but relatively similar at 0.036 for those 20-24 and 25-29 years old, and 0.037 for those over 30 years old. Although there was variation between age groups, the differences were not significant. With 6 degrees of freedom, the chi square value was 6.026, which does not meet or succeed the threshold value of 12.59. Therefore, there was no significant relationship between age and the ecological footprint.

TABLE 4.8 AGE AND THE ECOLOGICAL FOOTPRINT

	Age				
Ecological Footprint Range (gha)	18-20	20-24	25-29	30 +	**Total**
0 - 0.02	11%	11%	13%	5%	40%
0.021 - 0.04	3%	12%	11%	7%	33%
0.41 +	5%	11%	7%	5%	28%
Total	19%	34%	31%	17%	100%
Mean Ecological Footprint (gha)	0.028	0.036	0.037	0.037	0.035

4.5.2 Gender and the Ecological Footprint

There appeared to be a large difference between the ecological footprints of males and females in this study, with males on average using almost twice the number of global hectares per day as females (0.042 and 0.026 gha respectively). The chi square test calculated a value of 8.169 with 2 degrees of freedom, which was above the required value of 5.99. Therefore, there existed a significant relationship between gender and the ecological footprint, indicating that the males on average used significantly more area per day than females.

Further cross-tabulations were then developed in an attempt to discover possible reasons for the gender difference in ecological footprints. There were no significant relationships between males and females with regards to environmental concern (chi square value = 2.802, df = 2) or money spent per day (chi square value = 4.843, df = 3). However, a difference was found with regards to eating vegetarian meals with females eating significantly more meat-free meals than males (chi square value = 6.546, df = 2). As a meat diet requires extra land for growing grain and livestock, this variable would theoretically be expected to increase the size of one's ecological footprint. This factor could possibly explain why males, who ate more meat-based meals, had significantly higher ecological footprints. However, other factors such as a general larger consumption level or an increased amount of travel could have also contributed to males' larger ecological footprints.

TABLE 4.9 GENDER AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Gender		Total
	Males	Females	
0 - 0.02	16%	23%	39%
0.021 - 0.4	20%	13%	33%
0.41 +	20%	7%	27%
Total	56%	43%	100%
Mean Ecological Footprint (gha)	0.042	0.026	0.035

4.5.3 Home Occupation and the Ecological Footprint

To increase the validity of the chi square test, individual's home occupations were grouped into 'student' or 'non-student', with non-students being either employed, unemployed or retired (Table 4.10). On average, the students in the sample produced smaller per day ecological footprints (mean = 0.032) than the non-students (mean = 0.038). However, the slight difference could have simply been due to chance, as the chi square result of 2.830 with 2 degrees of freedom was below the threshold value of 5.99. Therefore, there was no significant relationship between home occupation and the ecological footprint.

TABLE 4.10 HOME OCCUPATION AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Home Occupation		Total
	Students	Non-Students	
0 - 0.02	19%	20%	39%
0.021 - 0.4	16%	18%	34%
0.41 +	8%	19%	27%
Total	43%	57%	100%
Mean Ecological Footprint (gha)	0.032	0.038	0.035

4.5.4 Money spent per day and the Ecological Footprint

It appears as though respondents who spent more money had larger ecological footprints (Table 4.11). The only exception was in the $0-25 category (mean = .036), which averaged a higher ecological footprint than the $26-50 group (mean = 0.028). However, as indicated previously, there was confusion regarding which costs were to be included in the amount of money spent per day, and while some respondents included accommodation prices, others did not. This inconsistency may have resulted in, or

at least contributed to this finding. Regardless of this exception, the differences between ecological footprints were significant as indicated by the chi square value of 12.978, which exceeded the required value of 12.59 with 6 degrees of freedom. Therefore, as the money spent per day increased, there was a significant increase in respondent's ecological footprints. This finding was expected since an increase in money spent could result in higher overall consumption levels, and possibly increased distance travelled, which in turn would increase the size of one's ecological footprint.

TABLE 4.11 MONEY SPENT PER DAY AND THE ECOLOGICAL FOOTPRINT

	Money spent per day (CDN $)				
Ecological Footprint Range (gha)	0-25	26-50	51-75	76 +	**Total**
0 - 0.02	7%	22%	7%	3%	39%
0.021 - 0.4	8%	8%	10%	7%	33%
0.41 +	4%	10%	6%	7%	27%
Total	19%	40%	23%	17%	100%
Mean Ecological Footprint (gha)	0.036	0.028	0.042	0.043	0.035

4.5.5 Nationality and the Ecological Footprint

There were some differences in the ecological footprints of individuals from different areas (Table 4.12). North and South American individuals averaged the highest footprints of approximately 0.038 gha per day, while Europeans generated footprints of approximately .035 and those holding African, Asian and Australasian nationalities averaged 0.032 global hectares daily. These differences were not significant with a chi square value of 3.859 and 4 degrees of freedom, which was below the threshold value of 9.49. Therefore no significant relationship existed between nationality and the ecological footprint.

TABLE 4.12 NATIONALITY AND THE ECOLOGICAL FOOTPRINT

	Nationality			
Ecological Footprint Range (gha)	Europe	Asia/Africa/Australia	North/South America	**Total**
0 - 0.02	20%	10%	10%	40%
0.021 - 0.4	16%	12%	6%	34%
0.41 +	12%	6%	9%	27%
Total	48%	28%	25%	100%
Mean Ecological Footprint (gha)	0.035	0.032	0.038	0.035

4.5.6 Country of Residence and the Ecological Footprint

Individuals based in different areas also produced varied ecological footprints (Table 4.13). Those living in the Americas produced the highest average ecological footprint of 0.039 gha daily, followed by those from Europe at 0.036 gha per day and Asian or Australasian residents (no respondents resided in Africa during the study) at 0.029 global hectares per day. These differences were not significant with a chi square value of 4.226 and 4 degrees of freedom. As the required value was 9.49, no significant relationship was found between country of residence and the ecological footprints.

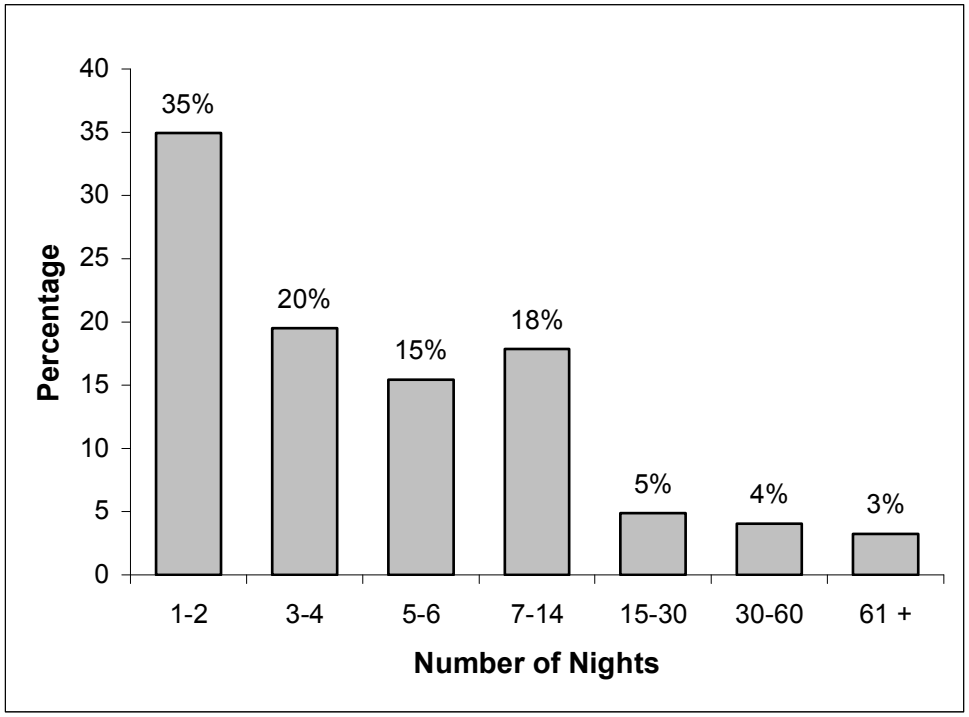
TABLE 4.13 COUNTRY OF RESIDENCE AND THE ECOLOGICAL FOOTPRINT

	Country of Residence			
Ecological Footprint Range (gha)	Europe	Asia/Australia	North/South America	**Total**
0 - 0.02	20%	9%	10%	39%
0.021 - 0.4	14%	10%	10%	34%
0.41 +	11%	4%	11%	26%
Total	45%	23%	31%	100%
Mean Ecological Footprint (gha)	0.036	0.029	0.039	0.035

4.5.7 Length of Stay and the Ecological Footprint

Although the mean number of nights spent at a hostel was 12 nights, most individuals stayed for a week or less (69%), with half of these individuals staying for only 1-2 nights (35%). Several stayed for 7-14 days (18%) and few stayed past 2 weeks (12%), although for those who did, the length of stay ranged from 15 to 270 days (Chart 4.2).

CHART 4.2 HOSTEL GUESTS' LENGTH OF STAY



Since there was much variation in respondents' length of stay, for analysis purposes three categories of 1-2 nights, 3-7 nights and more than 7 nights were developed (Table 4.14). It appeared that an increased length of stay resulted in a smaller daily ecological footprint, with those who stayed for just 1-2 days averaging 0.039 gha per day, while those who stayed for more than 7 days averaged 0.027 gha per day. This relationship was found to be significant with a chi square value of 14.834 and 4 degrees of freedom, surpassing the required value of 9.49. This finding was expected since those who stayed for more nights were able to spread their transportation, and possibly activity impacts over a longer period of time, thereby decreasing their daily ecological footprint.

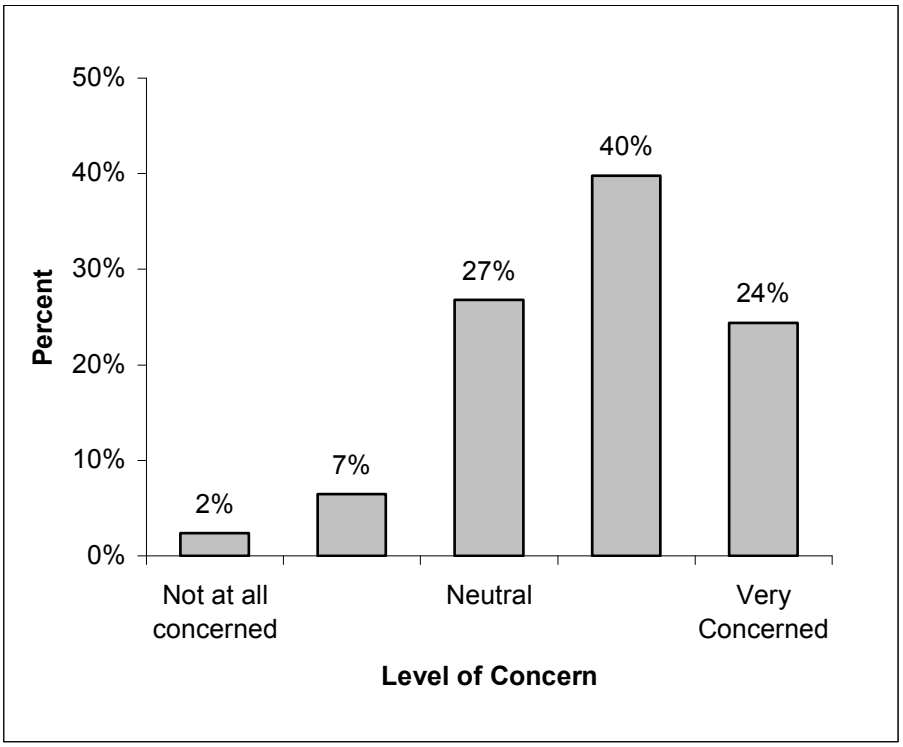
TABLE 4.14 LENGTH OF STAY AND THE ECOLOGICAL FOOTPRINT

	Length of Stay			
Ecological Footprint Range (gha)	1-2 nights	3-7 nights	7+ nights	**Total**
0 - 0.02	8%	16%	16%	40%
0.021 - 0.4	18%	10%	6%	34%
0.41 +	8%	14%	5%	27%
Total	34%	40%	27%	100%
Mean Ecological Footprint (gha)	0.039	0.037	0.027	0.035

4.5.8 Level of Environmental Concern and the Ecological Footprint

As shown in Chart 4.3, the sample was not overly concerned about the environmental impacts of their travels (mean = 3.77). Very few of the respondents were not concerned (9%), and a large portion was somewhat concerned (40%). The remaining individuals were split almost equally between being neutral (27%) or very concerned (24%). No significant relationships were found between nationality, country of residence or transportation choices and respondents' resulting levels of concern for the environment.

CHART 4.3 LEVEL OF CONCERN ABOUT TRAVELLING EFFECTS ON THE ENVIRONMENT



Individual's ecological footprints appeared to slightly decrease as their level of environmental concern increased (Table 4.15). Those who had no concern for, or were neutral regarding their impacts on the environment, had the highest mean ecological footprints, at 0.037 gha per day. Those who were somewhat concerned had slightly lower ecological footprints averaging 0.036 gha/day and those who were most concerned had the lowest daily ecological footprint of approximately 0.034 global hectares. These differences, however, were not significant, with a chi square value of 1.158 at 4 degrees of freedom.

TABLE 4.15 LEVEL OF ENVIRONMENTAL CONCERN AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Level of Environmental Concern			Total
	Not Concerned/ Neutral	Somewhat Concerned	Very Concerned	
0 - 0.02	14%	14%	11%	39%
0.021 - 0.4	11%	15%	7%	34%
0.41 +	10%	11%	6%	27%
Total	35%	40%	24%	100%
Mean Ecological Footprint (gha)	0.037	0.035	0.034	0.035

4.6 Ecological Footprint Components

This study took into account five components aspects of respondents' ecological footprints, which included transportation, accommodation, food, waste and activities, all of which are essential aspects of the tourist experience. The following sections will provide more information on each EF component, and the various factors that may have contributed to their results. As such, it will create a discussion that will be further built upon in Chapter 5.

4.6.1 The Total Ecological Footprint

An ecological footprint value indicates the ecological resource requirements, and total land area needed to support one's lifestyle. However, by discovering the various contributions of each EF component, more detail is provided as to where differences occur and where improvements can be made to reduce one's environmental impacts. The respondents in this study possessed footprints of varied sizes, depending on their traveling origin and destination, their length of stay and their traveling behaviours, such as eating habits, accommodation choices, and daily budgets. The large sample prevented these per day footprints from being compared separately, therefore they were grouped according to the hostel in which they filled out the survey. The average ecological footprint of guests at each hostel was calculated, and in turn, the average contribution of EF components was determined. This method of grouping was not meant to enable comparisons between hostels but rather to establish a range of average ecological footprints.

As can be seen from chart 4.4 and Table 4.16, the contributions of these components varied slightly between hostels but remained relatively similar in proportions, due to the consistently large

contribution of transportation impacts. On average, transportation accounted for 77%, accommodation for 5%, food for 9%, activities for 5% and waste for 5% of respondents' ecological footprints.

CHART 4.4 ECOLOGICAL FOOTPRINT BREAKDOWN

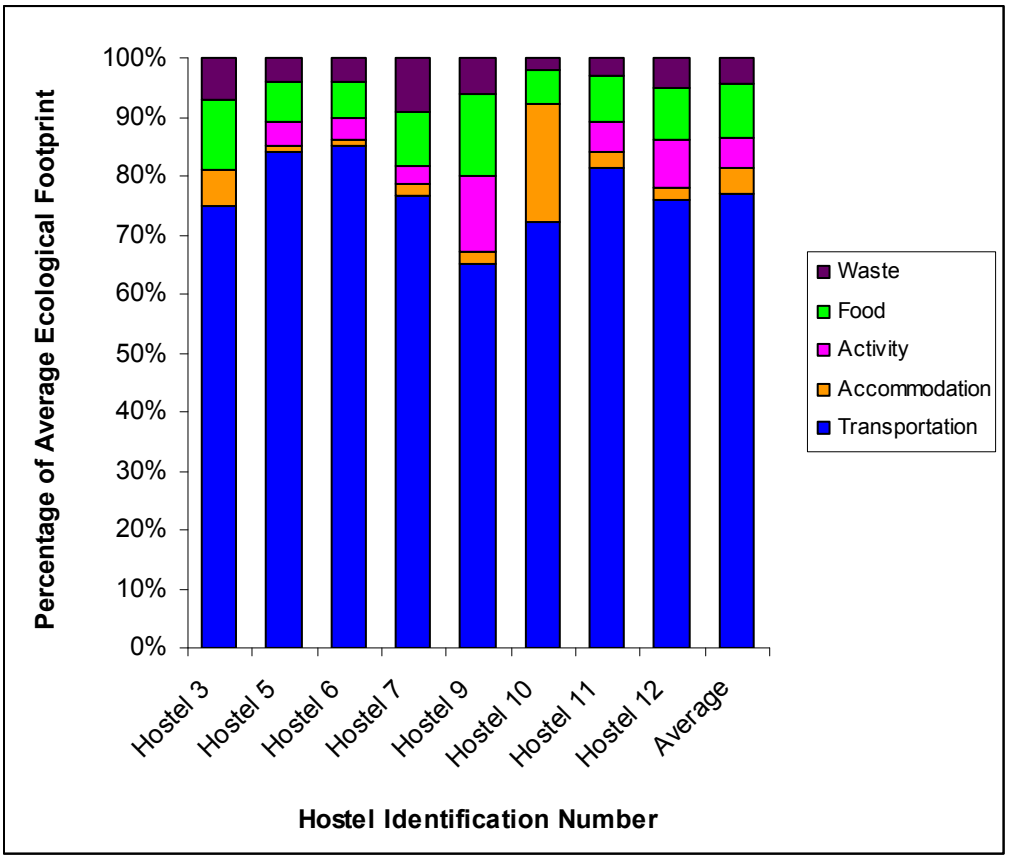
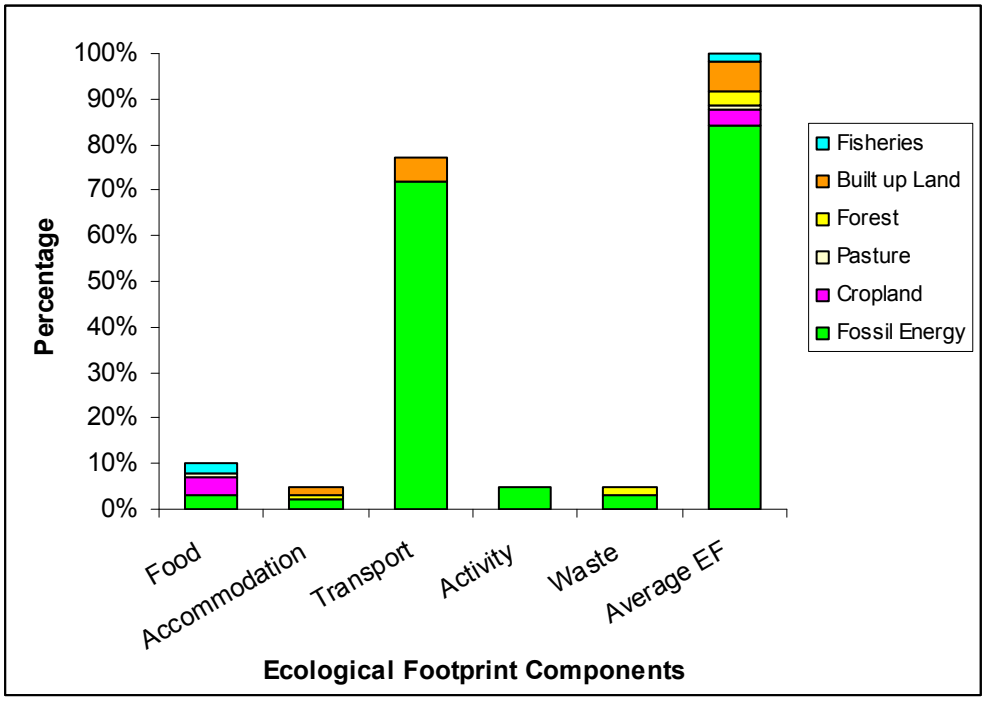


TABLE 4.16 DISTRIBUTION OF ECOLOGICAL FOOTPRINT COMPONENTS

	Percentage of Average Ecological Footprint				
Hostel ID	Transportation	Accommodation	Activity	Food	Waste
Hostel 3	75%	6%	0%	12%	7%
Hostel 5	85%	1%	4%	7%	4%
Hostel 6	85%	1%	4%	6%	4%
Hostel 7	76%	2%	3%	9%	9%
Hostel 9	65%	2%	13%	14%	6%
Hostel 10	73%	20%	0%	6%	2%
Hostel 11	82%	3%	5%	8%	3%
Hostel 12	76%	2%	8%	9%	5%
Average	77%	5%	5%	9%	5%

Since the ecological footprints were calculated in global hectares, components required resources from 6 main areas, being fossil energy, cropland, pasture, forest, built up land and fisheries (Chart 4.5). Since the contribution of transportation to the average ecological footprint was very high, the large amount of fossil energy was expected (84%), however this land area was also used by for food, accommodation, activities and waste. Of the remaining space in this study's average ecological footprint, 4% was cropland, 1% was pasture, 3% was forest, 7% was built up land and 2% was fisheries.

CHART 4.5 ECOLOGICAL FOOTPRINT LAND COMPONENTS BREAKDOWN



4.6.2 The Ecological Footprint and Accommodation

4.6.2.1 Accommodation Choice and the Ecological Footprint

Average guest ecological footprints ranged from 0.016 to 0.055 gha/day among the sampled hostels (Table 4.17). The larger footprints corresponding to hostels 5, 6, 11 and 12 were associated with medium or large sized city hostels. However it cannot be assumed that guests staying at large, city hostels will always have higher ecological footprints, as hostel number 9 was also large and city-based, yet its guests had an average ecological footprint of only 0.022 gha/day. This hostel's location however, was such that few guests arrived by aircraft, in comparison with the hostels previously mentioned which were in close proximity to airports.

The smaller hostels in the sample appeared to correspond with smaller guest ecological footprints as shown by hostel 3 (mean = 0.016 gha/day) and hostel 10 (mean = 0.029 gha/day). However, both of these hostels were based in suburban or rural environments, far from major cities, and therefore received few guests travelling by air, or taking part in resource-heavy activities. Hostel 3 also only provided 3 backpacker surveys, therefore the average guest ecological footprint was very dependent on these guests' travelling activities, and may have been remarkably different had there been a greater number of respondents.

TABLE 4.17 AVERAGE GUEST ECOLOGICAL FOOTPRINTS (GHA/DAY)

Hostel ID	Mean Daily EF	N	Std. Deviation
Hostel 3	0.016	3	0.019
Hostel 5	0.048	26	0.037
Hostel 6	0.055	9	0.035
Hostel 7	0.028	18	0.018
Hostel 9	0.022	20	0.015
Hostel 10	0.029	13	0.031
Hostel 11	0.036	15	0.026
Hostel 12	0.038	19	0.032
Average	0.035	122	0.030

Based on these findings, the researcher tested whether hostel setting (city vs. non-city) and size (small vs. medium/large) significantly influenced the size of guests' ecological footprints. The researcher used the categories developed previously, in conjunction with cross tab test and chi square values to determine if hostel size, location and setting influenced the size of guests' ecological footprints.

Average daily ecological footprints differed between small and large hostels with guests at smaller hostels (up to 78 beds) having a mean ecological footprint of 0.033 gha per day, in comparison with those staying at larger hostels who averaged 0.037 gha per day (Table 4.18). With a chi square value of 2.185, this finding was not significant, as it did not exceed the threshold value of 5.99 with 2 degrees of freedom. Therefore there was no significant relationship between ecological footprint and the size of hostel in which guests stayed.

TABLE 4.18 HOSTEL SIZE AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Size of Hostel		Total
	Small/Medium	Large	
0 - 0.02	15%	25%	40%
0.021 - 0.4	15%	19%	34%
0.41 +	7%	20%	27%
Total	37%	64%	100%
Mean Ecological Footprint	0.033	0.037	0.035

In terms of hostel location, guests staying in Quebec hostels appeared to have a higher average ecological footprint of 0.040 gha/day (Table 4.19). Hostel guests in Southern and Central Ontario had a lower ecological footprint averaging 0.035 gha/day while those in Northern or Eastern Ontario averaged 0.028 gha per day. This lower figure may have also been negatively skewed by the few individuals who traveled between hostels by bicycle and therefore did not produce vehicle emissions and as a result, had significantly lower ecological footprints than many other respondents. Regardless of these differences, the relationship between hostel location and ecological footprint was also found to be insignificant, with 4 degrees of freedom and a chi square value of 6.976, which was below the required value of 9.49.

TABLE 4.19 HOSTEL LOCATION AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Hostel Location			Total
	Quebec	South/Central Ontario	Eastern/Northern Ontario	
0 - 0.02	16%	12%	11%	39%
0.021 - 0.4	13%	8%	12%	33%
0.41 +	16%	7%	3%	26%
Total	45%	28%	26%	100%
Mean Ecological Footprint (gha)	0.040	0.035	0.028	0.035

Lastly, guests staying at city hostels averaged a higher daily ecological footprint (mean = 0.037) than those in rural or suburban settings (mean = 0.027), although there was a large difference in sample sizes with only 18 respondents staying in the two non-city hostels (Table 4.20). This relationship was also insignificant with a chi square value of 3.394 at 2 degrees of freedom, which was lower than the required value of approximately 5.99.

TABLE 4.20 HOSTEL SETTING AND THE ECOLOGICAL FOOTPRINT

Ecological Footprint Range (gha)	Hostel Setting		Total
	City	Rural/Suburban	
0 - 0.02	31.%	8%	39%
0.021 - 0.4	29%	5%	34%
0.41 +	25%	2%	27%
Total	86%	15%	100%
Mean Ecological Footprint (gha)	0.037	0.027	0.035

From these findings, it is evident that there were no significant relationships between hostel size, location or setting and guests' average ecological footprints. This indicates that, regardless of their current environmental initiatives, no hostel in the study had the advantage of enabling their guests to have naturally smaller ecological footprints due to their hostel's size, setting or geographical location.

4.6.2.2 Accommodation Factors Influencing the Ecological Footprint

As expected with a type of facility that efficiently houses a large number of people in a relatively small area, the accommodation component was, in general, a minor aspect of respondents' ecological footprints. On average, it accounted for 5% of respondents' mean ecological footprints, however it ranged from between 1% and 20% between hostels (Table 4.16). The large amount contributed by hostel 10 was mainly due to the large property size, which substantially increased the space per person value (Table 4.21). With regards to ecological footprint categories, only a small amount of land was taken up by accommodation footprints with fossil energy, built up land and forest providing the land needed for these facilities to operate (Chart 4.5).

A hostel's ecological footprint depends on several different factors, varying from construction materials, to the size of the building and property, its energy needs, and occupancy rate. In previous drafts of the ecological footprint calculator, it was assumed that houses were solely constructed of brick or wood, and other construction materials were not taken into consideration. In the 2003 version used for this study, only wood (in pounds) used for a facility's construction was taken into consideration. Although some of the newer hostels in this study may have been based on a wood frame, several appeared to be brick-based and some were constructed from old stone. For this reason, and the obvious difficulty in determining the weight of the wood used to build these hostels, construction materials were not included in the study. One can assume then, that had they been included, the ecological footprints of

the hostels would have been larger. With the exception of construction materials, the remaining accommodation factors will be explained in greater details in the next section.

4.6.2.3 Space Per Person

The amount of space allocated to each guest is a prime factor in a facility's ecological footprint contribution. A high number of guests in the available space would enable a hostel to share its ecological impacts among more people, thereby decreasing its contribution to guests' ecological footprints. As most hostels had a limited number of private rooms, the space was divided equally among hotel guests for this study, regardless of whether they were staying in dormitory accommodations or private rooms.

Space per person varied among hostels, ranging from 47 to 224 square feet per person (Table 4.21). Hostel 10, due to its rural location, was able to afford its guests the most space per person, both within the building and on the hostel property. No distinct correlations were apparent between the size or setting of hostels and their resulting space per person, as city hostels ranged from 88 to 139 square feet per person while small and large hostels appeared to have similar numbers. Although some hostels had little surrounding property, most did include court yards, gardens or outdoor social areas which gave the impression of increased space, even if the building was relatively crowded. On average, guests were provided with 103 square feet of space inside the hostel, and 112 square feet per person when taking into account the hostel property (excluding the rural hostel property which would have increased the average to 8657 square feet per person).

Obviously when considering the hostel space per person, occupancy rates must be taken into account, as they indicate whether these findings will increase or decrease with a change in the number of guests. A higher occupancy rate is preferred ecologically as it allows environmental impacts to be shared among a greater number of people, and therefore increases the environmental efficiency of the facility. As this study was conducted during the summer months, these occupancy rates can be assumed to be peak rates. The one exception is found in Hostel 6, which was a new hostel and therefore was still establishing itself with budget travelers. It could be expected that as this hostel increases its occupancy rate in future tourist seasons, the amount of space provided per person would decrease substantially. It must be noted that occupancy rates were not provided for hostel 11 and 10. As a result, the occupancy rate for hostel 11 was determined by averaging the rates of city hostels. As this hostel was quite popular and had a good reputation with travelers, there may be a chance that its actual peak occupancy rate was higher than the estimated 75%, and as a result, the space per person may have been slightly lower. The

occupancy rate of hostel 10 was more difficult to estimate as it was the only rural hostel in the sample. Therefore, it was determined by averaging the peak and non-peak occupancy rates (as indicated in the hostel surveys) of all hostels to provide an estimate. The accuracy of these estimations is not known.

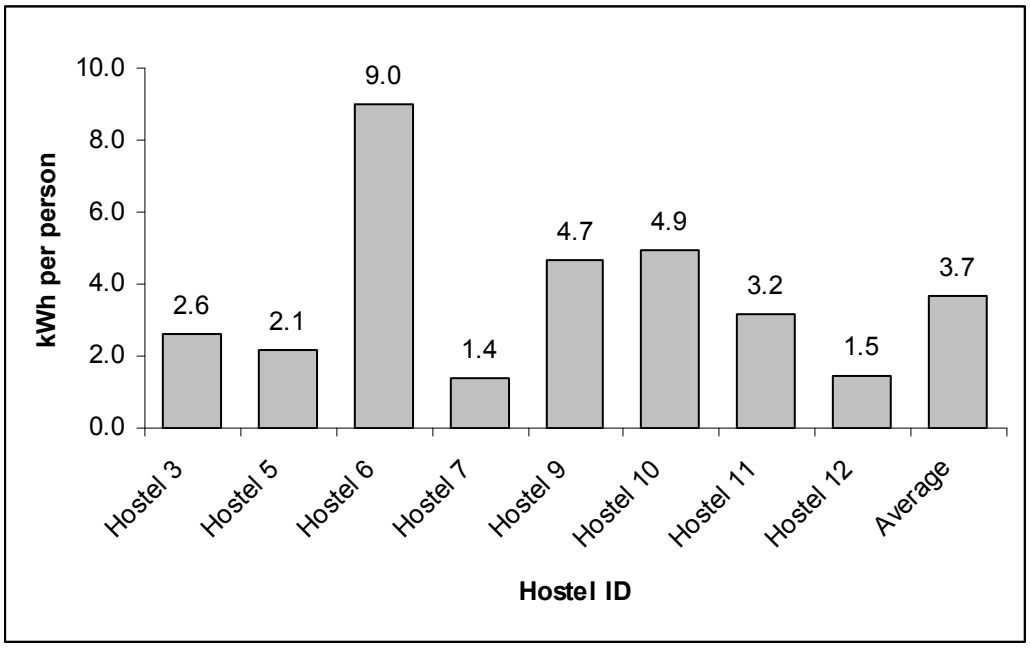
TABLE 4.21 SPACE PER PERSON AND OCCUPANCY RATE

Hostel ID	Building Space/ person (sq ft)	Property Space/ person (sq ft)	Average square feet/person	Occupancy Rate
Hostel 3	86	144	115	87%
Hostel 5	88	88	88	95%
Hostel 6	96	128	112	40%
Hostel 7	47	97	72	80%
Hostel 9	71	71	71	77%
Hostel 10	224	68470	34347	67%
Hostel 11	70	84	77	75%
Hostel 12	139	174	156	80%
Average	103	8657	4380	75%

4.6.2.4 Energy Usage Per Person

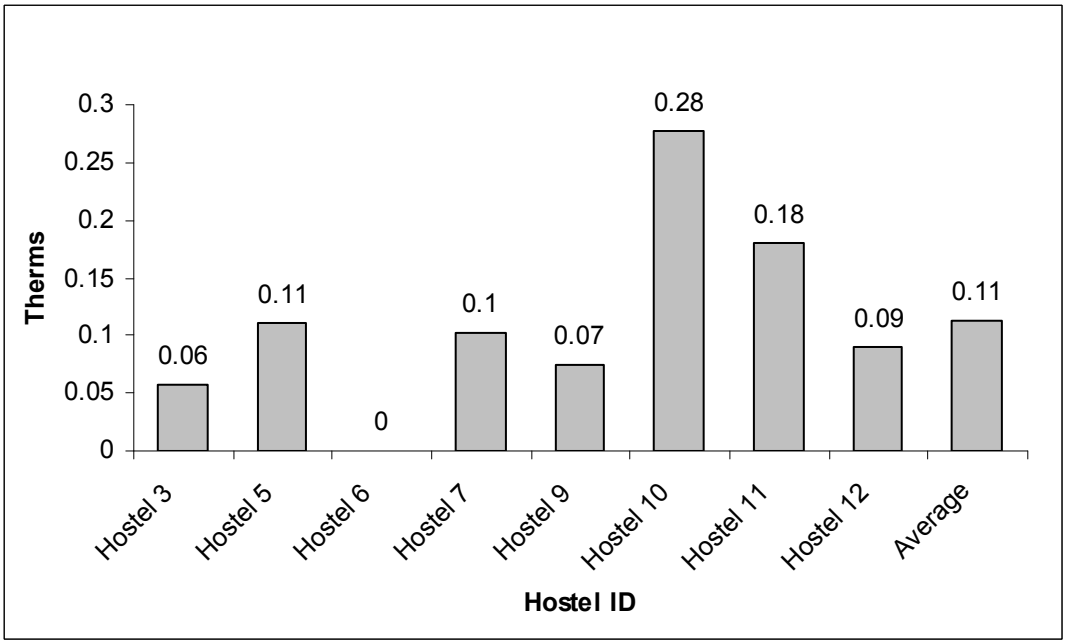
Energy use per person is a contributing factor to an accommodation's ecological footprint. Again, occupancy rates play a key role in determining the energy efficiency of a facility, as hosting a higher number of guests enables the hostel to share its energy usage and resulting ecological impacts with a larger number of people. All hostels in the study received their electricity from the main provincial grid, which derived its energy from fossil fuels, nuclear energy, large hydroelectric facilities and natural sources (wind, geothermal, waste, wood). The average amount of electricity used per person per day at the hostels was 3.6 kWh (Chart 4.6). Most hostels ranged between 1 and 5 kWh, however again Hostel 6 was the exception with a higher value of 9 kWh/person/day. Had their occupancy rate been on par with the other hostels (75% instead of 40%), this number may have been substantially lower, at the approximate level of hostels 9 and 10.

CHART 4.6 DAILY ELECTRICITY USAGE PER PERSON



With regards to heating, most hostels used natural gas, with the exception of hostel 6 (Chart 4.7). . As the study was conducted in summer, the use of heating energy was at a minimum and was generally only used for hot water tanks. Hostel 10 used the highest amount of heating energy at 0.28 therms per person per day. The remaining hostels ranged from 0 to 0.18, with an average of 0.11 therms per person daily.

CHART 4.7 DAILY NATURAL GAS USAGE PER PERSON



In summary, the accommodations provided by the sample's hostels contributed little to guests' overall ecological footprints. However, accommodation remains an important component of ecological resource use. The size of a hostel's ecological footprint relied on many factors including the use of construction materials, energy usage, occupancy rates and the size of the building and property. The accommodation footprints of guests and hostels were varied but generally remained within the same range, with the exception of Hostel 10, due to its large property size. Space per person varied among hostels due to the difference in size between buildings and the slight differences in occupancy rates. For the most part, these rates were relatively similar, with the exception of Hostel 6, which as a new hostel, had not yet established itself fully with travellers. Daily energy use in kWh and therms was also similar between hostels, however Hostel 6 again proved an exception with its low occupancy rate. Regardless of these minor differences, hostels contributed little in general to guests' ecological footprints, as a result of their ability to house a large number of guests in a relatively small area, thereby dispersing ecological impacts.

4.6.3 The Ecological Footprint and Transportation

4.6.3.1 Modes of Transportation

Transportation to the sampled hostels was dominated by aircraft (36%) and bus (30%) travel, with few respondents arriving by train (11%), shared car (14%), private car (6%) or bicycle (3%) (Table 4.22). Travel from the hostels followed a similar pattern, however in this case, fewer respondents traveled by aircraft than bus (25% and 36% respectively), and the use of train, and shared or private car increased slightly (13%, 16% and 7% respectively). These differences indicate that many travellers arrived at the hostels from international or distant locations, however most travelled domestically after completing their stay, and before returning to their home country. In several locations hostels provided a free pick up service for guests from airports, bus stops or train stations, however drop offs, if required, usually entailed a small cost.

TABLE 4.22 TRANSPORTATION TO AND FROM HOSTELS

Transportation Type	To Hostel	From Hostel
Private Car	14%	16%
Shared Car	6%	7%
Bus	30%	36%
Train	11%	13%
Aircraft	36%	25%
Bicycle	3%	3%
Total	100%	100%

4.6.3.2 Transportation Choice and the Ecological Footprint

To determine if a relationship existed between transportation modes and the ecological footprint, respondents were grouped into three categories of aircraft, car and bus/train. As bicycles do not produce emissions when used (not taking into account the energy and materials used in their production and maintenance), they were not included in the ecological footprint cross-tabs, reducing the sample number to 118 instead of the original 122 (excluding the outlier case).

Individuals that traveled by bus or train to or from their hostel generated the smallest ecological footprints per day, averaging 0.028 and 0.029 gha respectively (Table 4.23, Table 4.24). As expected, those who arrived or departed by aircraft had considerably larger ecological footprints, approximating 0.046 and 0.050 gha per day respectively, followed by car passengers at 0.035 gha and 0.036 gha for travel to and from their accommodations. The relationship between transportation mode and the ecological footprint was significant with 4 degrees of freedom and chi square values for transportation to and from the hostels of 17.001 and 33.008 respectively, which far surpassed the required value of 9.49. This finding suggests that travel by bus and train is highly preferable for decreasing one's ecological footprint as the fuel and emission costs are spread between a greater number of people, thereby increasing the eco-efficiency of the vehicle. Conversely, it also indicates that aircraft travel, regardless of its ability to distribute ecological costs among many people, significantly increases the amount of land needed to support one's traveling activities, in comparison with the same trip completed by bus, train or car.

TABLE 4.23 TRANSPORTATION AND THE ECOLOGICAL FOOTPRINT: ARRIVALS

	Transportation to Hostel			
Ecological Footprint Range (gha)	Car	Aircraft	Bus/Train	**Total**
0 - 0.02	3%	10%	23%	36%
0.021 - 0.4	12%	11%	12%	35%
0.41 +	6%	15%	7%	28%
Total	21%	36%	44%	100%
Mean Ecological Footprint (gha)	0.035	0.046	0.028	0.035

TABLE 4.24 TRANSPORTATION AND THE ECOLOGICAL FOOTPRINT: DEPARTURES

	Transportation from Hostel			
Ecological Footprint Range (gha)	Car	Aircraft	Bus/Train	**Total**
0 - 0.02	3%	9%	24%	36%
0.021 - 0.4	15%	2%	18%	35%
0.41 +	5%	16%	7%	28%
Total	23%	24%	51%	100%
Mean Ecological Footprint (gha)	0.036	0.050	0.029	0.035

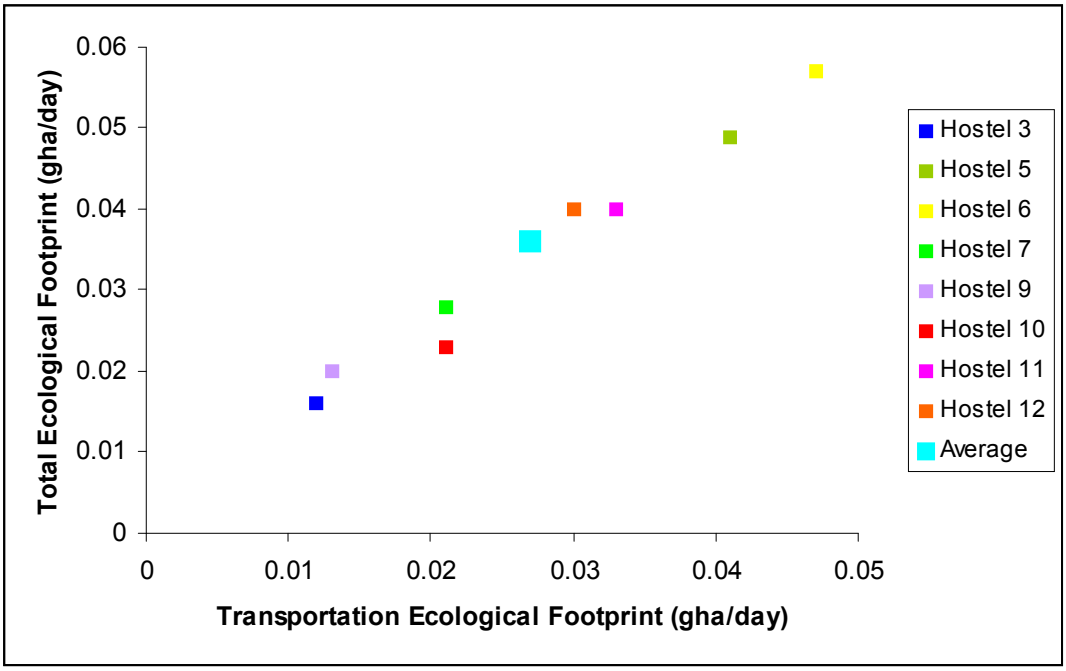
4.6.3.3 Transportation Factors Influencing the Ecological Footprint

As is the case with accommodation, there are many factors that influence the transportation component's size and overall contribution to an ecological footprint. These include the type of vehicle, the distance traveled and fuel efficiency. In this study, transportation accounted for approximately 77% of guests' ecological footprints, and ranged from 65% to 85% between hostels (Table 4.16). As 87% of the respondents were non-Canadian, and 84% resided in a country other than Canada, these large transportation impacts were expected due to the fuel and aircraft infrastructure needed to take part in long haul travel. That being said, not all foreign respondents traveled to or from an international destination, some had been traveling, or where planning on traveling domestically before leaving the country. On talking to hostel guests and through the surveys, it was evident that most respondents wanted to see and do as much as possible in a short amount of time. As a result, they may have traveled long distances to reach a specific place, only to stay a night or two and then travel to the next destination. This type of fast-paced travel would not only result in higher transportation costs but also a larger overall ecological footprint.

There appears to be no distinct relationship between the contribution of transportation to guest's ecological footprints and the hostel within which they stayed (Table 4.16). The only noticeable difference lies in Hostel 9, where few respondents, if any, arrived by aircraft, thereby enabling the average transportation component (65%) to be lower than that of other hostels. With regards to ecological resource use, transportation accounted for 72% of fossil fuel use, and 5% of built up space, which appeared to be closely corresponded to railway travel.

As shown in Chart 4.8, an increase in transportation resource requirements resulted in a relatively equal increase in the size of one's overall ecological footprint. As a result, in this study, the transportation component almost completely dictated the size of a guest's footprints. This relationship indicates that transportation choices, and as such a destination choice, must be made carefully if one desires to have a relatively eco-friendly holiday. Consideration must be given with regards to the distance to be traveled, the mode of transportation to be used, and its resulting fuel efficiency. Train and bus transportation is the preferable choice, followed by a shared or private car. However in some cases, air travel is the only choice for reaching a destination. One therefore has to question whether transportation, air travel in particular, can be made more sustainable, to allow people to continue exploring places while limiting the size of their traveling ecological footprints. This topic of sustainable transportation will be further discussed in Chapter 5.

CHART 4.8 TRANSPORTATION AND THE ECOLOGICAL FOOTPRINT



4.6.4 The Ecological Footprint and Food

4.6.4.1 Choice of food and the Ecological Footprint

As food patterns and amounts varied greatly among respondents, eating habits could not be analyzed separately or according by food group. However, it was possible to analyze how ecological footprints differed between those who ate mostly vegetarian meals and those who usually included meat in their diets (Table 4.25). Surprisingly, the sample was split almost equally between respondents who at least sometimes ate vegetarian meals (48%), and those who usually or always included meat in their diet (52%). The average ecological footprint of the meat eaters was 0.033 gha per day; a finding actually smaller than the 0.037 gha/day generated by the semi-vegetarians. With a chi square value of 3.495 and 2 degrees of freedom, it was evident that no significant relationship existed between eating vegetarian meals and the ecological footprint.

Initially, it was thought that the significant difference in ecological footprints between the males and females in the sample could have been attributed to the significantly higher amount of semi-vegetarianism among females. However, as eating vegetarian meals and the ecological footprint are not related, there must be other reasons for the gender difference in footprint sizes. Perhaps, since food was

generally a small aspect of respondents' ecological footprints (mean = 9%), the differences between eating habits were overshadowed by the large contribution of the transportation component.

TABLE 4.25 VEGETARIANISM AND THE ECOLOGICAL FOOTPRINT

	Frequency of Vegetarian Meals		
Ecological Footprint Range (gha)	Never/Rarely	Sometimes/Always	**Total**
0 - 0.02	25%	15%	40%
0.021 - 0.4	16%	17%	33%
0.41 +	11%	16%	27%
Total	52%	48%	100%
Mean Ecological Footprint (gha)	0.033	0.037	0.035

4.6.4.2 Food Factors Influencing the Ecological Footprint

The contribution of food to an individual's ecological footprint greatly depends on the type of food consumed and the corresponding number of servings eaten in a given period of time. In this study, only certain 'staple' foods were included in the calculator such as grains, pasta, meat, seafood, fruits, vegetables and dairy products. In addition, several popular accessories such as sugar, margarine and vegetable oil were included, along with select drinks of beer, wine, juice, tea and coffee. The calculator did not take into account whether the food eaten was organic or local, both of which are thought to be relatively environmentally friendly, depending on their origin. It would be a difficult challenge to accurately account for every food and drink a person consumes in addition to the usual staples. One would need to include snack foods such as popcorn, candy, granola bars and the many accessories used to make food more enticing such as sauces, ketchup and salt. Since a limited number of food groups were considered in the calculator and more irregular items are not included, one can assume that guest's ecological footprints may have been bigger had the food component been explored in more detail.

It was evident during the data collection process that filling in the food section of the surveys was time-consuming and tedious, and obviously required a good memory. It is understandable that keeping track of all the food one eats is difficult, particularly when travelling since many foods may be based on convenience and therefore pre-packaged. The researcher often heard comments like "I don't remember what I ate this morning, let alone three days ago". As a result, on several of the surveys, it was clear that respondents had greatly underestimated their food consumption, possibly due to not being able to remember, or simply due to respondents being unwilling to take the time to be more accurate. As a

result, it can be assumed that many of the food ecological footprints discovered in this study were smaller than they would have been, had the respondent's been more meticulous in filling out the surveys.

Regardless of this underestimation, food on average accounted for only 9% of guests' ecological footprints and ranged from just 6% to 14% (Table 4.16). The differences between hostels may have been due to a number of factors such as the type of food available within the hostel and at surrounding stores, food prices, respondent's eating habits, and gender differences at the hostels, since females ate significantly more vegetarian meals than did males. However, it does appear that changing one's diet to include more vegetarian meals may not necessarily result in a lower ecological footprint, possibly due to the immense and overshadowing effects of transportation.

In general, food was the second largest contributor after transportation to guests' ecological footprints, requiring land from fossil energy (3%), cropland (4%), pasture (1%) and fisheries (2%). Since the respondents were budget travelers, the small contribution of food to their ecological footprints was expected. Given the background of 'backpacker' type travelers, one could assume that these travelers were more interested in experiencing the attractions of Ontario or Quebec rather than indulging in expensive culinary delights, and as such, their meals may have reflected their small budgets. This assumption was verified by the researcher's observations of the hostel's guest kitchens where most travelers were found to survive on inexpensive stables such as spaghetti, rice, fruit and small amounts of fresh vegetables. Meals were generally quick to prepare, had few extra accessories, were usually comprised of one dish that included several different food groups, and appeared relatively healthy. Although meat was seen, it was rare in comparison to cereals and grains, possibly due to its higher price and its inconvenience when travelling.

4.6.5 Activities and the Ecological Footprint

The activities that one takes part in while traveling can be a vital aspect of one's ecological footprint, especially when they require much traveling or use a large number of resources. Taking into account the parts of activities that can actually be quantified, activities were not expected to be a large component of respondents' footprints, mostly due to respondents' limited budgets. In the surveys, guests were able to fill in up to 4 different activities, and these varied greatly from learning English to whale watching to taking part in hostel bingo nights. Table 4.26 reflects the number of times each type of activity was mentioned by respondents, taking into consideration that some guests may have provided fewer than 4 activities.

The types of activities that guests took part in depended heavily on what was available in the area, and also on the hostel's involvement in organizing social or sightseeing activities. For instance, taking part in in-house activities and day trips was very common for respondents staying at hostel 12, due to the large number of enjoyable and affordable activities organized, or advertised each week by the hostel. Conversely, outdoor activities were more popular for hostel 10 due to its rural location and the lack of big-city attractions. In addition, hostel 5 was in close vicinity to several well-known summer festivals which, as a result, were attended by large number of its guests.

Throughout all hostels, the most common activity was general sightseeing, almost always by foot, with the exception of a few guests who joined a sightseeing tour by bus. As the hostel tourists were generally young, budget travelers, this cheap form of entertainment and physical activity was expected to be popular. The second most frequented activity was partying at pubs or clubs, which, given the sample's young ages and the common 'backpacker' desire to socialize with fellow travelers, was also anticipated. Corresponding with this partying, drinking was generally popular among the sample, with respondents consuming anywhere from 0 to 3.4 quarts of alcohol per day, which approximates up to 9 bottles of beer per day or 63 beers per week. Although these numbers may have included non-alcoholic beverages such as juice or pop, the researcher rarely saw guests consuming these and more commonly came across travelers drinking beer or coolers in the afternoons or evenings.

Other common pastimes included day trips, outdoor activities, festivals and events, cultural activities and visiting attractions. Activities requiring extra money such shopping, sports events or organized tours were mentioned less frequently. In addition, low-key activities including movies, hostel events or relaxing were uncommon, indicating that 'backpacker' type tourists are generally active travelers.

TABLE 4.26 FREQUENCY OF GUEST ACTIVITIES BY HOSTEL

Type of Activity	Hostel								Total
	Hostel 3	Hostel 5	Hostel 6	Hostel 7	Hostel 9	Hostel 10	Hostel 11	Hostel 12	
Unguided sightseeing	2	22	5	19	14	1	2	8	**73**
Pubs/Clubs	0	11	2	6	3	1	3	11	**37**
Day trips	2	0	0	0	4	0	5	16	**27**
Outdoor Activities	0	1	0	0	7	14	2	2	**26**
Festivals	1	16	3	0	2	0	0	2	**24**
Arts/Culture	0	5	8	6	3	0	1	0	**23**
Attractions	0	6	0	0	0	0	3	11	**20**
Hostel activities	0	0	0	1	0	2	10	2	**15**
Shopping	1	3	2	1	2	1	2	1	**13**
Guided Sightseeing	0	2	1	1	2	0	1	1	**8**
Reading/Relaxing	0	0	0	3	0	4	1	0	**8**
Movies	0	1	1	1	0	2	1	1	**7**
Working	1	0	0	1	0	3	1	0	**6**
Sports events	0	0	0	0	0	0	0	5	**5**
Study	0	0	0	0	0	0	1	0	**1**

Activities were challenging to quantify into equivalent global hectares, and as a result, they were difficult to fully include in respondent's ecological footprints. It was simply impossible and impractical to determine the total ecological costs of each tourist attraction, be it a 'touristy' street, the CN tower or a city in general. Most guests took part in some form of unguided sightseeing, which usually encompassed walking around the area, window shopping, visiting free attractions and taking photographs. If one ignored the energy and resources need to produce and maintain these 'attractions', this type of activity incurred marginal ecological cost, as guests were not producing emissions or using energy from fossil fuels.

Where possible, entrance fees or activity costs were inputted into the entertainment section of the calculator, and any travel incurred during activities was included with guests' transportation amounts. In the case of pubs and clubs, the alcohol consumed was included by respondents under their food section and therefore could not be recorded separately as an activity, unless they were required to pay a cover fee to enter the bar. Since much of the activity information could not be accounted for in ecological footprint calculations, one may assume that individuals' footprints and the activity contribution to these footprints would have been larger had they been quantified accurately. However, taking these limitations into

account, activities accounted for 5% of guests' ecological footprints, and ranged from 0 to 13% between hostels (Table 4.16). The differences in activity contributions could be due to a number of factors. For instance, activities contributed at least 3% to overall ecological footprints for respondents who stayed at city hostels, probably due to them having greater access to attractions and therefore paying more in entrance fees or activity costs. Conversely, in the case of hostel 3 and 10, the percent of land attributed to activities was 0%, probably due to both hostels being away from major cities and smaller in size. In the case of hostel 10, which was rurally located, guests often took part in nature-based activities, such as hiking and swimming, which incurred few ecological costs. With regards to hostel 3, guests did take part in activities, however these activities were either free or were included under the transportation section.

4.6.6 Waste and the Ecological Footprint

The ecological footprint of waste was determined based on the average monthly amount of paper, glass, aluminum, metal and plastic that was discarded by each hostel. Recycling was also taken into account at a rate of 37%, which was the average amount of waste diverted from landfills in Ontario and Quebec, leading up to the summer of 2007. As the ecological footprint calculator required waste to be entered on a per person basis, occupancy rates also played a factor as higher amounts of waste were less noticeable if they could be shared among more hostel guests. However, one must also note that as hostel guests increase in number, the amount of waste produced can increase proportionally. Although it is difficult to estimate the exact amount of waste each hostel guest produces and discards, these numbers may at least give an indication of the relative waste produced by hostels and their visitors.

In general, waste was not a large component of guests' ecological footprints. On average, it accounted for 5% of guests' footprints and ranged from 2 to 9% between hostels (Table 4.16). The variation in numbers may have been due to differences in how hostels, or the municipalities within which hostels were located, handled their waste. Other contributing factors could have been the types and amounts of materials that could be recycled by each hostel and how strictly hostels enforced waste management rules among their guests. Regardless of the reasons, these low numbers were somewhat expected since almost 85% of respondents tried to reduce their waste, and 88% of hostels always recycled applicable materials.

Although the small amount of waste produced at hostels is promising, improvements could be made to further decrease waste production, by improving signage, providing more detailed instructions of where to dispose of certain items, and by locating garbage and recycling bins in more accessible and high

traffic areas. When conducting the study, the researcher found that recycling bins were almost always located near the kitchen or eating areas. However, if recycling bins were located in other areas of the hostel, they were often not easy to find and rarely had information on what could or could not be recycled. As a result, guests sometimes had little choice but to discard recyclable materials in the general garbage. Therefore, although a minor aspect of guests' ecological footprints in this study, waste production in hostels has potential to be further minimized.

4.7 Summary of Findings

This chapter has presented the findings of this study, based on the data collected through guest and hostel surveys, informal discussions with accommodation managers and owners, and ecological footprint calculations. Information was provided on the sample's demographics, traveling behaviours and environmental practices, and the ecological footprint was analyzed with regards to its relationship to the above factors, and its breakdown into the components of transportation, accommodation, food, activities and waste. The results of these findings are summarized below.

Hostel Findings

- Most hostels were medium to large sized and located in city environments. They generally catered towards short term, independent 'backpacker' type travelers looking for budget accommodation and social experiences, but also accepted other types of travelers. A range of accommodation and self-catering facilities were offered for $20-$70 per night.

Sample Demographics

- The sample was mostly comprised of young students or full-time employees, with slightly more males than females, who traveled on restricted budgets. Most were European, although North America was relatively well represented, and was followed by Australia and Asia/Middle East.

Environmental Practices of Guests

- The sample was somewhat concerned about the environment and generally took part in environmental behaviours that were inexpensive and convenient, such as recycling. Behaviours that required more effort, money or thought were not as common. It appeared that those who were more consistent in performing environmental behaviours had higher levels of concern for the environment, but the significance of this relationship could not be tested.

Environmental Practices of Hostels

- Hostel managers had a higher level of concern for the environment than did their guests, and they were enthusiastic about promoting environmentally friendly traveling and learning how to make their hostels more 'green'. Recycling was very common among hostels, and although other behaviours did sometimes occur, they were often limited by the amount of time and money available. The 'greenness' of hostels and ways in which traveling could be made more environmentally friendly was generally not promoted to guests before or during their stay. Most managers believed that 'backpacking' had potential to become more eco-friendly.

The Ecological Footprint of Guests

- Most guests used less than 0.04 global hectares per day and the average footprint was 0.035 gha/day (with the exclusion of the outlier value), however a wide range of footprints existed from 0.004 to 0.36 gha/day.

The Ecological Footprint and Demographics

- It was found that males and those who stayed for shorter periods of time had significantly higher ecological footprints than females and long-term hostel residents. Most respondents stayed for a week or less, however the average stay was 12 days in length, due to a few individuals who stayed for up to 270 days. It was also found that those who spent more money had significantly higher ecological footprints. The ecological footprint was not significantly related to other demographics or traveling characteristics.

The Ecological Footprint and Accommodation

- The ecological footprints of guests varied among hostels, however there were no significant relationships between guest's ecological footprints and hostel size, setting or location. The ecological footprint of hostels depended on many factors including construction materials, building and property size, energy needs, and occupancy rate. Due to the nature of the buildings, construction materials were not taken into consideration, therefore decreasing the size of each hostels' actual ecological footprint. Building and property size varied among hostels with hostel 10 providing guests with the most among of space due to its rural location. Occupancy rates were very important as they dictated how many people shared the hostels ecological costs. For the most part occupancy rates were relatively high, with the exception of the newly established hostel 6, which as a result, possessed a higher amount of space per person and a higher energy use per person. All hostels derived their energy from the provincial grid and used relatively small amounts of energy, with the

exception of hostel 10 which used the largest amount of natural gas. Regardless of the differences, accommodation was generally a minor aspect of guest's ecological footprints.

The Ecological Footprint and Transportation

- The contribution of transportation to an ecological footprint depended greatly on the mode of transportation used, the distance traveled and the vehicle's fuel efficiency, with aircraft having the highest ecological costs. Most guests traveled to and from hostels by bus or aircraft and the footprints of guests who traveled by bus or train were significantly lower than those who traveled by car or aircraft. Transportation was by far, the largest component of guests' ecological footprints.

The Ecological Footprint and Food

- Food was the second largest contributor to guests' ecological footprints but was still very small in comparison to transportation. No significant relationship was found between guests' footprints and eating vegetarian meals. Although the EF calculator took into consideration the usual food staples, it did not account for specialized foods or meal accessories. Also, guests were not always accurate with their food details. Both of these factors may have caused guests' food ecological footprint to be smaller than in reality.

The Ecological Footprint and Activities

- Activities varied based on hostel's locations and settings, however in general, the most common activities were unguided sightseeing and partying at pubs and clubs. They were generally difficult to quantify but where possible, they were found to contribute little to guests' ecological footprints.

The Ecological Footprint and Waste

- Waste generated per person was a small component of guests' ecological footprints and greatly depended on occupancy rates. Although most hostels had programs in place to decrease their waste, the researcher's observations confirmed that further improvements could be made in this area.

Chapter Five

5. DISCUSSION

The previous chapter presented the findings of this study. However, the numbers alone cannot enable one to gain an in-depth understanding of the relationship between hostel tourism and guests' ecological footprints. Neither can the findings directly indicate what changes are needed to increase the sustainability of hostel tourism. Therefore, this chapter will provide further analysis on the results of this study, as they relate to the findings of previous literature. Firstly, the demographics and behaviours of the sample will be discussed in relation to previous backpacker studies. Secondly, the ecological footprint of the hostel tourists in this study will be incorporated into the greater theme of 'sustainable tourism', and will be compared with other types of tourism, sustainable benchmark values and the footprints of home country residents. In addition, the characteristics of reduced ecological footprints will be discussed with regards to further decreasing backpacker ecological footprints. Lastly, this chapter will discuss the findings of hostels' and respondents' environmental practices, in order to provide a foundation for a list of recommendations in Chapter six.

PART 1

5.1 Backpackers in Ontario and Quebec

The findings in this study with regards to the demographics and behaviours of backpackers appear to be relatively consistent with that of previous literature, and they portray the general backpacker heterogeneity discussed by Sorensen in 2003. Through the surveys, and in discussion with many respondents, it was found that most individuals were independent travelers who were flexible in their plans, adventurous, spontaneous and active participants. These findings were also discovered by Hyde and Lawson in 2003, Poon (as cited in Hyde & Lawson, 2003) and Mohsin & Ryan (2003). Furthermore, Loker-Murphy and Pearce (1995) found backpackers to have a preference for budget traveling and social interaction. These characteristics were also discovered in this study with parties being the second most common activity and most per-day budgets being limited to under $75.

In further accordance with previous literature, the males in this research slightly outnumbered the females. Of great interest is that fact that Hecht and Martin's Canadian study (2006) documented a male

to female ratio of 56:44, which was almost identical to the 57:43 ratio discovered through this study. This male predominance is not only apparent in the Canadian backpacking sector, since Sorensen (2003) found the male to female backpacker ratio in Australia to be 60:40. As he expects the ratio to only increase in favour of males in developing countries, or those with higher traveling risks, one could possibly assume that backpacking is more popular with males. Independent travel is certainly daunting and challenging to new or experienced travelers. Having to 'fend for oneself' in a new country, make important decisions, and attempt to communicate to the locals when there are language or cultural barriers, is certainly not for the weak-hearted. As such, one might expect males to be more open to this adventure due to the general belief that they possess greater risk-taking tendencies than do females.

With regards to age, past literature has found most backpackers to be under 30 years old, give or take a few years (Sorensen, 2003; Loker-Murphy & Pearce, 1995; Hecht & Martin, 2006; d'Anjou, 2004), and Pearce further extended the age range to those under 40 years old. The findings in this study were similar, as young people, up to the age of 29 years old dominated the sample, with a decent, albeit smaller number of individuals being over 30. Of course, as found during this research, backpackers are not the only tourists staying at hostels. Although considered 'Youth' Hostels, these facilities generally cater towards travelers looking for cheaper, self-catering accommodation, and although this is often associated with, and sometimes limited to 'backpackers', many hostels also welcome older couples, families and retired individuals of varying ages. As such, the average age of hostel populations may be relatively young, but that's not to say that hostel tourists will always be under 30 or 40 years old.

In terms of nationality, the findings are again relatively consistent with most guests originating from Europe and North America. Unlike Sorensen's 2003 study and the research conducted by Hecht and Martin in 2006, there were few respondents from Australia and even fewer from New Zealand, possibly due to the high flight costs and the long traveling distances, which those from North America and Europe did not have to endure. One also must remember that the Southern Hemisphere has its main summer holiday from November to February, which is when university students have the most time available for travelling. Therefore, this study may have included more respondents from the Southern Pacific, had the study taken place during the Canadian winter. On the contrary however, travelers from Asia and the Middle East were generally well represented considering their numbers in previous studies have not been as high. This finding would confirm d'Anjou's (2004) belief that the number of youth travelers from these areas is increasing.

There was much variation among individual's spending budgets, however, most individuals spent between $26 and $75 per day. Loker-Murphy and Pearce (1995) established that hostel tourists were budget travelers; a finding confirmed by Hecht and Martin's 2006 study where the average daily expenditure was $45. Obviously there will be variation in backpackers' daily budgets, depending on whether they stay in a dorm or a private room, their activity interests, the amount of food and drink they consume, and their transportation preferences. However, as the average tourist in Canada spends $144 per day, easily twice the amount of money spent by most respondents in this study, one can confidently say that the individuals involved in this research reflected the backpacker characteristic of being 'budget travelers'.

Length of stay was a more difficult statistic to compare with previous literature, as the surveys simply requested respondents' origin and destination surrounding the studied hostel. Therefore, it is not entirely known whether these tourists traveled for prolonged periods of time which has been found to be a characteristic of many backpackers (Loker-Murphy and Pearce, 1995). However, through discussion with respondents, it appeared that most were away from home for up to two months and very few were on extended trips for work, study or holiday purposes. This finding is consistent with the fact that many respondents were students or employed full-time and therefore may have had limited time available for traveling. It was also found that many individuals were fast-paced travelers, staying at their hostel for only 1-2 nights in order to visit the area highlights, socialize with other travelers and then quickly move onto the next destination. This exhausting type of travel might not be needed, and for some would be difficult to physically and mentally endure on a consistent basis, if respondents' trips were prolonged in length. Therefore, is the researcher speculates that the length of respondents' trips may have been shorter in this study than that recorded in previous literature.

According to d'Anjou (2004), most international backpackers head for destinations far from home where they can travel regionally, which seemed to occur often within this study. As Sorensen (2003) indicated, this type of travel requires more time, and he estimated that most backpackers travel for between 2.5 and 18 months. Since most respondents in this study appeared to travel for less than 2 months, one can speculate about possible contributing factors to their shorter traveling time. The timing of the study, which occurred during the peak traveling season of summer, may have definitely influenced this finding, as the majority of Northern hemisphere students would be on their summer holiday and therefore would be available for travelling for a limited period of time. Had the study taken place during a non-peak traveling season, such as fall or winter, perhaps the researcher may have come across more long-term travelers; the 'hard-core' backpackers per se. In addition, the study was concentrated in

popular tourist destinations. As long-term backpackers tend to travel 'off the beaten track' (Mohsin & Ryan, 2003), the findings may have differed if the study taken place at more rural or non-touristy locations. Unfortunately, however, this was not possible since hostels in Ontario and Quebec tend to be concentrated around specific tourist attractions or destinations and are limited in number.

Therefore, when considering the sample as a whole, respondents were young, budget travelers, who took part actively in informal and fun activities, as found in previous literature. Males slightly dominated the sample, as expected from previous studies, and most respondents originated from Europe and North America. Aside from small variations in backpacker nationalities and traveling times, and the occasional 'non-backpacker' hostel tourist, one can confidently say that sample used in this study was a strong reflection of the 'backpacker' sector, as described previously in the literature.

PART 2

5.2 The Ecological Footprint of Hostel Tourists

The ecological footprint was first developed as a measure of sustainability by Wackernagel and Rees (1996), in order to measure the intensity by which humans use resources and generate waste, relative to an area's capacity to provide for these activities. By taking into account the amount of cropland, pasture, forest, fossil energy, built up land and fisheries needed for consumption, absorbing waste and infrastructure, a person or place's footprint can be determined in biologically productive global hectares (WWF, 2006). As a relatively new concept, the ecological footprint carries a hefty share of assumptions and limitations (Global Footprint Network, 2006; Hunter & Shaw, 2007; Gossling et al., 2002; Wackernagel & Yount, 2000; WWF, 2006; Senbel, McDaniels & Dowlatabadi, 2003; Holland, 2003) and has yet to be used and tested extensively in the realm of tourism. However, since it can account for different components of a lifestyle, including transportation, provide global impact indications and express resource demands in a standardized measurement, this method was recently proposed as a key indicator of sustainable tourism (Hunter & Shaw, 2007). This move does not come without challenges however, due to tourists' diverse choices regarding transportation, food, accommodation and activities, requiring the ecological footprint of each area to be determined separately and then summed to determine each individual's overall footprint (Hunter 2002).

5.2.1 The Backpacking Ecological Footprint and other Tourism Sectors

The ecological footprints of hostel tourists in this study averaged 12.8 gha annually and ranged from 1.5 to 132.9 global hectares per year. Although there are still relatively few studies incorporating the footprint concept into tourism scenarios, several researchers have attempted to measure the impact of individuals in other tourism sectors. In a study conducted by the World Wildlife Fund (2002), guests who took part in package holidays from the U.K to Majorca or Cyprus had average ecological footprints of 10.9 and 25.53 gha/year respectively, however flights in this case were relatively short in distance. Patterson, Niccolucci and Bastianoni (2007) found the ecological footprint of international and domestic tourists in Tuscany to equate to 5.28 gha annually, however this was with the exclusion of transportation. Since air travel accounted for 86% of guests' footprints, total ecological footprints including transportation would have averaged 37.05 gha per year; a finding considerably higher than the 12.8 gha average discovered through this study. Lastly, Gossling et al's 2002 study reported that the annual ecological footprint of U.K. tourists visiting the Seychelles averaged 66.6 gha per year, which granted a long flight, was more than four times the average discovered in this study. One can state therefore, that based on past literature, and taking into account the international and long-haul travel associated with backpacker tourism, the average overall ecological footprint of backpacker tourists tends to be considerably smaller than some other types of tourism.

With regards to destination ecological footprints, the individual contributions of the food, activity and accommodation components in this study were relatively insignificant in comparison to that of transportation. As a result, respondents' average destination EF was only 2.9 gha/year, taking into account the average transportation contribution of 77%. In Gossling et al.'s (2002) study, transportation accounted for 91% which resulted in a destination EF of 5.99 gha/year, while the WWF (2002), with an 86% transportation contribution, discovered a destination EF of 1.526 gha/year for Majorca and 3.57 gha/year for Cyprus. Patterson et al. (2007), as mentioned previously, calculated a destination EF of 5.28 gha. Therefore, in addition to backpackers generally having lower overall ecological footprints than some other types of tourism, they appear to also be more environmentally friendly at the destination than tourists who desire more amenities and luxuries.

On average then, both overall and when at the destination, backpackers may to be more environmentally friendly travelers, than other international or resource-heavy tourists. Of course, one cannot state that backpacker tourism is the most eco-friendly form of tourism, as fewer impacts would definitely be experienced by, among others, local or domestic tourists taking part in camping holidays.

There were also several respondents in this study who had markedly larger ecological footprints than those found in previous literature. As a result, one cannot conclude that backpackers in future studies will always be more environmentally friendly than other tourists. One must remember that when comparing ecological footprints of tourists from different studies, variations may result from different methodologies with regards to ecological footprint calculations. In addition, as a new concept, the EF is constantly evolving and new aspects are included into EF calculators as they are discovered, which can complicate direct comparisons between studies that take place a few years apart. Furthermore, what is probably the most apt issue when dealing with such a heterogeneous population is the fact that tourism is not standardized. Each tourist travels to and from different locations, uses varied types of transportation, eats slightly different food and takes part in different activities. As a result, small variations can result in large differences between ecological footprints.

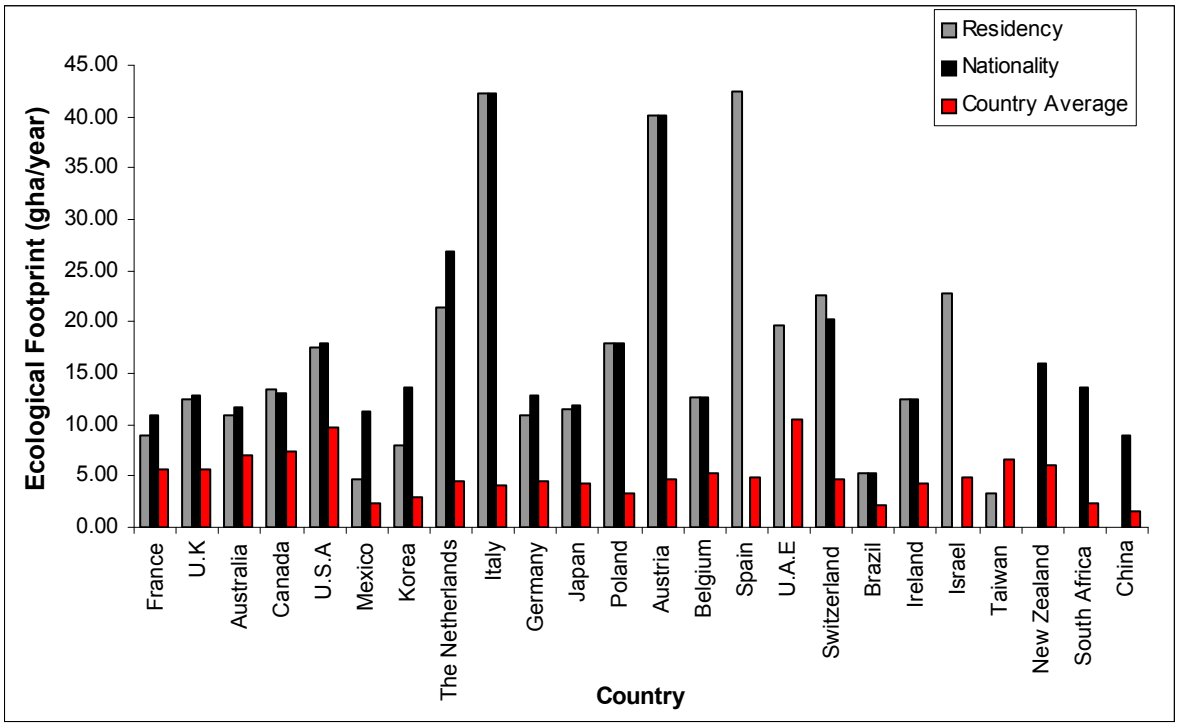
Therefore, taking these limitations into account, one can conclude that Scheyven's (2002) speculation that backpackers are more environmentally friendly than some other tourist markets is somewhat correct. Due to limited budgets, their hostel accommodations and their prolonged holidays (Loker-Murphy and Pearce, 1995) which enable them to spread their transportation impacts over long periods of time, they are more environmentally friendly than several other forms of tourism. Due to this decreased use of resources, backpackers may be useful for countries or regions that depend on tourism revenues, but perhaps do not have the resources to sustain mass tourism, or have sensitive ecological areas that could be ruined through the introduction of resource-heavy types of tourism. However, as this speculation was only based on 3 separate studies, further, more detailed research is needed on the environmental impacts of backpacker tourism, in comparison to more tourism sectors and in an absolute manner.

5.2.2 The Backpacker Ecological Footprint and the Home Country EF

The ecological footprint of a country is determined by its population size, residents' consumption levels, and the intensity with which the country produces goods and services for consuming. The average income of a country's inhabitants also plays a part with high-income countries possessing considerably higher ecological footprints than middle or low-income countries. As such, the overall development level of a country plays a major part in the size of its citizen's ecological footprints. Currently, the United Arab Emirates averages 11.9 gha per person/year while Canada, the United States and the United Kingdom have annual footprints averaging between 5.6 and 9.6 gha, and Indian individuals average only 0.8 gha per year (WWF, 2006).

When comparing hostel guests' average ecological footprints to country per capita footprints, ranging from 1.6 gha for China to 11.9 gha for the U.A.E, it is evident that guests' traveling footprints almost always surpassed those of their home country, sometimes by a considerable amount (Chart 5.1). Since some countries were only represented by 1 or 2 individuals, these values were highly dependent on the ways in which these individuals traveled. Had there been more respondents from these under-represented countries, these numbers may have been lower and the differences between the home and travelling averages may have been less evident. In addition, as indicated in the previous section, there appeared to be no significant relationship between individuals' home countries and their ecological footprints. Therefore, this chart is not meant to indicate the average traveling ecological footprint of individuals from different countries. Neither is it meant to provide a comparison of ecological footprints between different countries. Rather it simply indicates that the ecological footprints of these hostel tourists were usually considerably larger than the average footprints generated by individuals in their home countries, mostly as a result of transportation impacts.

CHART 5.1 BACKPACKER ECOLOGICAL FOOTPRINTS VS. HOME ECOLOGICAL FOOTPRINTS



Source: Global Footprint Network (2007)

5.2.3 The Backpacking Ecological Footprint and the Fair Earth Share

On its own, an individual's ecological footprint is nothing more than a number, and as such, does not indicate whether a certain lifestyle is environmentally sustainable. However, by dividing the total number of global hectares by the worldwide population, a sustainable baseline value was developed, known as the fair earth share. In essence, this value indicates the maximum number of hectares that can be allocated to all individuals, in order that life necessities such as food, water, warmth and shelter can be equally shared amongst the world's population, thereby providing them with the opportunity to live sustainably. As the worldwide ecological footprint in 2003 was 14.1 billion global hectares, the fair earth share value was determined to be 2.2 global hectares per person annually or 1.8 hectares if only taking into account biologically productive areas (WWF, 2006). If using this value as a sustainability indicator, it must be taken that any value above 2.2 gha indicates an unsustainable way of life. As such, individuals with larger ecological footprints take hectares and opportunities away from those in less developed or poverty-stricken countries. However, elements such as a lack of education, poor government leadership and business needs make the fair earth share concept substantially more complicated. Furthermore, when using the ecological footprint in a tourism scenario, one must remember that in addition to the footprint tourists produce while on their travels, they may simultaneously produce a footprint in their home country through heating their houses, using electricity or simply using build land for their property. As such, the combined value of the home and away ecological footprints would need to be lower than at least 2.2, if not 1.8 gha in order to be sustainable.

Regardless of the fair earth share's complexities, the concept does still enable people to measure their lifestyles and resulting ecological footprints against that which is thought to be sustainable. In this study, the travelling lifestyle intensity generated ecological footprints that equated to 1.5 to 132.9 global hectares annually, with an average of 12.8 hectares, which far surpasses the annual sustainable baseline of 1.8, or even 2.2 global hectares. When converted to a per-day amount, respondents' ecological footprints ranged from 0.001 to 0.36 gha, in which case they all fit within the yearly limits of the fair earth share values. Of course, it is entirely possible that those with smaller traveling ecological footprints could return home and live relatively frugally for the rest of the year to compensate for the ecological cost of their travels. In this case, they could possibly still conclude the year with an overall ecological footprint under 2.2 gha. However, since the average footprint in the study equated to 0.035 gha per day, it is highly likely that most respondents, once back to normal life, would have had an annual ecological footprint that far exceeded the fair earth share value.

Although, as previously discovered, backpackers appear to be more environmentally friendly than other tourists, if one only considers footprints at or below the fair earth share value to be sustainable, the majority of respondents in this study were definitely not living in an environmentally sustainable manner while on their travels. Although a few individuals did maintain an ecological footprint under or very close to 2.2 gha/year while travelling, these respondents only travelled by bicycle and therefore did not produce emissions. It is certainly possible that these respondents could travel by bicycle all year round, however, it is highly likely that at some point they would rely on emission-producing forms of transportation. Taking this into account, in addition to that fact that many aspects could not be included in ecological footprint calculations, it is probable that these individuals eventually generated an annual EF that was 'unsustainable', according to the fair earth share concept. As a result, it appears that even when transportation is not a major factor, maintaining an environmentally sustainable lifestyle that equates to 1.8 or even 2.2 global hectares per year is challenging for most individuals, and for some, may not even be achievable.

However, living sustainably is certainly not impossible. A study done by Chambers, Simmons and Wackernagel (2000), showed that a family of four could lower their ecological footprints substantially through technological upgrades and personal choices. Proving that a drastic decrease in living standards is not necessary to become sustainable, the family lived in a larger than average solar powered house with modern appliances and usual home comforts. The house was energy efficient and took advantage of natural heat and light, while the family actively partook in reusing products, recycling, buying local food and goods and using an electric car. Compared to the average ecological footprint in the study of 3.6 gha, the members of this family decreased their footprints by 65% to only 1.26 gha each. Although such a large decrease may not always be possible, this study indicated that dramatic changes to people's ecological footprints are achievable through educated decisions, behavioural modifications and increased technological efficiency.

5.3 The Paradox of Sustainable Tourism

Having discovered that living in a sustainable manner is possible with some modifications to one's lifestyle, the question arises: can tourism also be sustainable? Having found that backpacker travelers, who are generally more environmentally friendly than other international tourists, have average ecological footprints that far exceed sustainable values, the answer in general appears to be no. Unfortunately, tourism requires travel between places and public long haul transportation is not yet possible through emission-free vehicles. As the cycling respondents in this study, who had no

transportation impacts, only just maintained sustainable ecological footprints, it appears that most forms of tourism that involve travelling impacts may simply be damaging to the environment. Butler (2007), a top tourism academic, confirms this speculation when he states that "tourism is a good thing, sustainability is a good concept, it's a pity they are incompatible".

Unfortunately, 'sustainable tourism' continues to be a heated topic of discussion among tourism researchers and the widely known 'sustainable development' definition in the Brundtland Report provides little assistance due to its vagueness and ambiguity. Questions surrounding sustainable tourism continue to surface, in regards to what aspects of tourism must be sustained, and whether the goal is conservation or preservation (Hunter & Green; Butler as cited in Hunter, 2002; Hunter, 1997)? The 1996 World Tourism Organization answered some of these questions through their definition on sustainable tourism. However, they also mentioned that sustainable tourism involved "maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" (p. 30). Does simply maintaining an environment make it sustainable? Humans have used the earth for their own interests for many years, to the point where some important ecological areas are totally degraded. Surely then sustainability requires the active enhancement rather than maintenance of ecological systems? Butler (2007) believes that attaining sustainability requires deliberate actions over the long term in order for the benefits to be felt by a destination, but even he confirms that sustainable tourism is a paradox of terms. In his 1999 review on sustainability, he stated that:

> "it is unlikely, therefore, that there will ever be a totally accepted definition of sustainable tourism that is universally applied, because the very success of the term lies in the fact that it is indefinable and thus has become all things to all interested parties. To the tourist industry, it means that development is appropriate; to the conservationist, it means that principles articulated a century ago are once again in vogue; to the environmentalist, it provides a justification for the preservation of significant environments from development; and to the politician, it provides an opportunity to use words rather than actions. Only to the tourist does it really mean or provide nothing other than, in most cases as Wheeler (1993) has bitingly observed, an opportunity to feel good while enjoying oneself" (p. 11).

So if tourism is generally an unsustainable activity, where does this leave backpacking, or more importantly, the entire tourism sector? Realistically, few people would be willing to forgo all tourism activities in favour of preserving the natural environment, especially when tourism impacts are still being discovered and may only occur in the long term. As "one of the largest single sectors of world trade" and one of the world's largest industries (Hunter, 2002, p. 8), many countries rely heavily on tourism

revenues, some even benefit largely from backpacker travelers (Scheyvens, 2002), and a large decrease in tourists could be detrimental to worldwide economies. Therefore, as a second-best type of scenario, where total sustainability is currently not possible, one may have to rather focus on promoting types of travel that place fewer negative consequences on the natural environment, and therefore decreases ecological footprints towards a 'slightly more sustainable' level.

5.4 Decreasing the Backpacker Ecological Footprint

Unfortunately, producing a substantial decrease in backpackers' ecological footprints may prove a challenge due to the immense transportation impacts, which cannot be easily reduced, especially in the case of long-haul travel. Of course improvements can always be made in the areas of accommodation, waste, food and activities, but due to their relatively minor contributions, whether these changes will produce visible improvements in a backpacker's footprint is questionable. This section will discuss the specific characteristics of these components that could further assist backpackers and hostels in decreasing their ecological footprints. In addition, the important issue of transportation will be addressed, particularly with regards to air travel and the possibility of sustainable flight.

5.4.1 Sustainability at the Destination: Characteristics of a Small EF

5.4.1.1 Accommodation

Although a relatively minor aspect in this study, hostel facilities can influence the size of backpackers' ecological footprints through the size of their accommodation impacts and the number of people among which they can be divided. Efficient and economical, hostels are designed to accommodate a large number of people in a relatively small area, thereby usually reflecting the EF-friendly characteristics of small amounts of built space, energy usage and waste per person.

In this study, hostels boasted relatively small amounts of built space per person, which were able to be minimized through the use of dormitory accommodations that could accommodate up to 20 travelers per room in double or triple bunks. Although sometimes crowded, and at times seemingly chaotic, this high-density accommodation is more environmentally friendly than those generally used by other tourism sectors. For instance, in a New Zealand study conducted by Becken et al. (2001), the built space per person for a Bed and Breakfast tourist was an immense 1162 ft^2. For hotel and motel tourists, the numbers were 696 ft^2 and 373 ft^2 respectively, and for backpackers, their finding of 186 ft^2 was

substantially smaller; although still larger than the average discovered in this study. By taking into account the built space per person, even large accommodations can be considered efficient if they optimize their use of space and maintain high occupancy rates, which counteracts the general belief that large structures automatically have high ecological costs. Although hostels may not emphasize spaciousness, their low amounts of built space per person certainly portray efficiency and enable them to generally contribute little to backpackers' ecological footprints.

Another aspect that enabled accommodations to be a minor component of guests' ecological footprints was the small amounts of energy usage attributed to each guest. Similarly to the amount of built space, the daily amount of energy used by each guest can be minimized where high occupancy rates are maintained. With an average daily electricity usage in this study of 3.7 kWh per person, hostels again appear to be more environmentally friendly when compared to hotel, B&B and motel guests in New Zealand at 28 kWh, 26 kWh and 7.08 kWh respectively, although these values included electricity as well as other energy sources (Becken et al., 2001). Unlike built space per person, hostel guests and staff can be directly accountable for their energy usage if they have access to energy regulating sources such as thermostats and light switches. Although this type of individual control is certainly appreciated by guests, the lack of facility-wide regulation can decrease the energy efficiency of the hostel, thereby resulting in larger guest ecological footprints. As the installation of 'green' power is not always feasible for hostels, guest footprints could therefore possibly be further decreased by centrally controlling the facility's energy or installing energy efficient features such as timed lights and water meters, limited electricity hours, and Energy star appliances.

The last aspect that accommodations can influence with regards to guest ecological footprints is the generation of waste. By providing the necessary disposal facilities for recycling and compost, hostels can assist guests in decreasing the amount of landfill waste. Guest waste generation is also influenced by the amenities and facilities provided by a hostel. Those with in-house bars will generate bottles for recycling, and those who only provide disposal cutlery and crockery will produce a large amount of kitchen waste. Quite simply, what is provided by a hostel must at some point be disposed of. As such, a hostel with more amenities and products will probably produce more waste than a hostel that only provides the basics. However, this is not to say that up-scale hostels will have higher amounts of waste per person, as this factor greatly depends on the occupancy rate of the hostel, as well as their waste management programs and the amount of waste that they are able to divert from landfills. As such, a large, relatively luxurious hostel with high occupancy rates and a successful waste management program may still produce small amounts of waste per person, and contribute to smaller ecological footprints.

5.4.1.2 Food

The type of food eaten at hostels not only depends on guest preferences, but also on what is available from hostel cafés and restaurants. As such, hostels may greatly influence food choices. In this study, possibly due to the overshadowing impacts of transportation, eating vegetarian meals was not found to be a major influence on the size of guests' ecological footprints. However, vegetarianism is seen to be more environmentally friendly, since a grain-based diet has a lower environmental impact per food calorie than a resource-intensive meat-based diet (White 2000). In 2000, it was found that 40% of the world's grain production was set aside for feeding livestock (Brown and Kane as cited in White, 2000). This type of agriculture requires substantially more resources per unit of food than other types of agriculture, with cattle consuming 7 kg of grain, and chicken, 2 kg of grain, to produce 1 kg of meat (White, 2000). If this grain were available for direct human consumption, it could support a larger number of people than the 1 kg of meat and therefore would be more sustainable. As such, hostels could assist guests increasing their environmental sustainability, and possibly decreasing their ecological footprints by promoting and serving more vegetarian meals.

Of course non-meat meals may not appeal to all tourists, however decreasing one's ecological footprint may still be possible by consuming a diet consisting of organic and local food. Although a lower amount of chemicals and fewer emissions are certainly more environmentally friendly, there is still much debate over whether organic or local is better. Consuming local food reduces the demand for imported produce and results in decreased atmospheric emissions, but if not organic, local food can be saturated with chemicals. Conversely, one can purchase organic produce from Chile, and forgo the chemicals in favour of aircraft emissions. Although a thorough analysis could provide the exact impacts of organic and local foods, the better choice is not yet very clear and will often depend on availability and price, especially when dealing with tourists that travel on tight budgets. Therefore, hostels may be able to help guests to travel more sustainably by advertising local and natural food markets and offering local and organic meals. In addition, they could provide information on the benefits and disadvantages of local and organic foods, to enable their guests to choose what they feel is the more environmentally responsible option.

5.4.1.3 Activities

Activities in this study were generally not a large component of guests' ecological footprints. The most popular activity was basic sightseeing, on foot in cities, or during a nature-based activity in

more rural areas, such as biking, swimming or hiking. As these activities incurred no monetary costs or vehicle emissions, they used few resources and contributed little to guests' ecological footprints. Since the footprint calculator considers entertainment costs to average 6MJ/$, activities that required entrance fees or travel, such as pub or club nights and visits to large-scale attractions incurred larger ecological costs and contributed significantly more to guests' ecological footprints. Therefore, participation in free or low-cost activities, particularly those that are nature-based, could possibly enable travelers to decrease their ecological footprints.

However, this is not to say that other activities are completely unsustainable, as the impact of activities on one's overall ecological footprint greatly depends on the impact of other aspects such as food, transportation and accommodation. In this study, transportation alone almost accounted for guests' entire ecological footprints, and therefore a slight change in one's activities from a paid sightseeing tour to one that was free, would probably not have produced a noticeable decrease in one's ecological footprint. As such, although there is always potential for backpacker activities to become more environmentally friendly, a change to more sustainable activities should be considered in addition to decreasing one's transportation impacts.

5.4.2 Greening the Journey: Can Transportation Impacts be Decreased?

In this study, the transportation component was the greatest contributor to respondents' ecological footprints. Although transport is not always considered in the realm of tourism impacts, the concept of tourism simply cannot exist without the movement of people from one location to another. As such, any discussion on sustainable tourism must be made with transportation resource requirements in mind, which will vary according to the vehicle used and the distance traveled. Unfortunately, decreasing tourism's transportation impacts is a difficult issue, with no perfect solution aside from simply not traveling. Since many people may not be willing to consider this option, a decrease in travel would certainly not be welcomed by countries that greatly rely on tourism revenues, the next best scenario is considering options that may at least decrease the impacts of tourist transportation.

5.4.2.1 The Promotion of Local and Domestic Tourism

One option for increasing the sustainability of tourism is through the promotion of local and domestic tourism, both of which generally require less travel than international tourism. Domestic tourists are travelers that travel within their own countries, while local tourists are those that travel within

a limited distance of their homes. Local and domestic tourism can maintain substantially smaller ecological footprints, due to their proximity to home and reliance on cars, buses or trains, rather than more ecologically costly aircraft, however this depends on the size of the country. Although approximately 85% of respondents in this study were international tourists, many traveled locally or domestically once they had landed in Canada. Certainly, this combined type of travel was not quite as beneficial to their traveling ecological footprints as being a local tourist in their own countries, but it did allow them to distribute their aircraft impacts over a longer period of time.

Unfortunately, promoting true local tourism or even domestic tourism in the backpacker sector would simply not be feasible, as the entire concept of backpacking is based on international travel, and some hostels only cater to foreign tourists. However, travelling locally or domestically once in an international country could be more environmentally friendly than simply flying between countries. For instance, a tourist who travels by aircraft to Toronto for a month and tours Ontario or Quebec by bus or train, could have a substantially lower ecological footprint than one who travels for the same amount of time, but visits several different countries and travels only by aircraft. Of course, if one is to promote domestic and local tourism, the amount of time that tourists can allocate for traveling must be considered, since although more sustainable, travel by bus or train takes a considerably longer amount of time. However, as most backpacker tourists tend to travel for prolonged periods of time (Loker-Murphy & Pearce, 1995), length of stay should not really be an issue. The more challenging issue would probably be encouraging the adventurous backpacker sector to spend their holidays within one country, or more if reachable by low-impact transportation, rather than visiting many international destinations via aircraft.

Combined local or domestic, and international travel still incorporates aircraft transportation and therefore it would probably still be considered 'unsustainable' under the fair earth share concept. However, as backpacker tourism is built on a foundation of international travel and will probably continue to happen regardless of its impacts, the promotion of longer stays in destinations that incorporate local and domestic tourism may certainly assist backpacker travelers to slightly decrease the size of their ecological footprints.

5.4.2.2 Sustainable Flight: A Possibility?

On average, the transportation component in this study was the greatest contributor to backpackers' ecological footprints, probably due to the large distances traveled, the relatively frequent use of aircraft and the high number of foreign travelers. As indicated before, air travel is a major

contributor to greenhouse gases with aircrafts emitting carbon dioxide, nitrogen oxides, water vapour, hydrocarbons, carbon monoxide, soot and sulphur compounds (Gossling, 2000). Since the accommodation, food, activities and waste components were relatively minor, an increase in transportation sustainability could possibly result in a marked decrease in backpackers' ecological footprints. Although all vehicles need to be considered with regards to increased sustainability, aircraft travel is particularly important when dealing with international travelers. Therefore, this section will discuss current research on sustainable flight and whether the options available could assist future backpackers in decreasing their ecological footprints.

The most obvious option for increasing aircraft sustainability would be to travel on emission-free fuel. Currently, most aircraft are fueled with kerosene made from fossil fuels (Wardle, 2003), however as these are non-renewable, research is currently focusing on biological fuel sources (International Solar Energy Society, 2002). Biodiesel, and synthetic kerosene made from biomass, could both be CO_2 neutral and would require few modifications in existing aircraft infrastructure. However both fuels have large lifecycle impacts due to the immense amounts of land and energy needed for production (Wardle, 2003; Akerman, 2005, Holden & Hoyer, 2005) and as such, their use in aircraft would probably not result in a substantial decrease in tourists' ecological footprints. Hydrogen on the other hand, is clean, lightweight, CO_2 neutral and has the lowest impacts throughout its lifecycle. However, it is not available in large enough volumes to support the world's growing transportation system, and its use in aircraft would require radical changes in aircraft designs, and fuel production, distribution and storage systems (Akerman, 2005).

Although not yet possible, it has been suggested that a Green Air Miles Program be developed for when sustainable fuels can be used on aircraft (Wardle, 2003). In this program passengers could choose to fly on pure kerosene or pay 9-27% more to travel on mixed or pure biodiesel, termed "green fuel" (Wardle, 2003, p. 1). It is anticipated that this choice would be easy to offer to passengers when booking airfares, and that a small, unnoticeable levy on global airfares could be used to initiate and maintain the program. Although only some flights will operate on biodiesel fuel it would be possible to allow all passengers this option regardless of their route, since airlines flying on green fuel/kerosene mixes could create green air miles in accordance with the number of 'biodiesel passengers' on their aircraft. Since flight emissions are spread across the atmosphere, these green air miles could be sold to other airlines to allow passengers to purchase green fuel tickets, even if their flight operates on kerosene. In essence, the biodiesel purchased by all passengers would need to be bought and used by the global airline industry, without needing to match each passenger with the requested amount of biodiesel on their

flight (Wardle, 2003). Although promising, with Virgin Airlines having conducted 'green fuel' trials (Kanellos, 2008), it is anticipated that by traveling on eco-friendly fuel, passengers will develop guilt-free consciences and therefore will not feel the need to reduce their travels, which is the most important need for reaching sustainability targets (Wardle, 2003).

As sustainable fuels, and therefore the Green Air Miles Program are not yet feasible, a more realistic option for increasing flight sustainability is through the introduction of environmental charges. Here, the ecological costs of engine emissions are measured, and corresponding charges are added to passengers' ticket prices, to cover the expenses of environmental improvement projects, such as research programs on eco-friendly engines. The extra charges will vary according to aircraft operations, engine types and airport congestion, however it is anticipated that landing costs will range from 45 Euros for a Jetstream 31 to 48, 934 Euros for a B747-400, with an average of 4967 Euros per aircraft. Individually, ticket prices may only increase by approximately 4.40 to 16.40 Euros, which would definitely be manageable for hostel tourists, even with their stringent budgets. It is expected that environmental charges will decrease flight demand by 0.2-7.4% (Lu & Morrell, 2001), however, these extra charges are minimal when compared to overall ticket prices, and as backpackers are avid and adventurous travelers, they will probably not deter them from traveling. Initially, the introduction of environmental charges will probably not decrease backpackers' ecological footprints, however if the extra funds can be used to neutralize aircraft emissions, or improve engine efficiency, they will certainly increase the long-term sustainability of backpackers' flights.

A similar program that is currently available to many hostel tourists is the purchase of carbon credits to offset aircraft emissions. A carbon credit is equivalent to 1000 kg of CO_2 that is either removed from the atmosphere or not emitted in the first place (Carbon Planet, 2005). There are many different types of carbon credits, however the most common credits are developed through sequestration programs or CO_2 saving projects. Currently, several worldwide organizations such as Atmosfair, My Climate and The Carbon Neutral Company offer carbon credits for purchase, at a rate of approximately 20 Euros per ton of CO_2 plus administration costs (Atmosfair, ND). Through these companies, passengers can calculate the amount of gas their flight will emit and choose to donate an equivalent sum of money to certified and monitored environmental improvement projects that will theoretically, neutralize these gases in the atmosphere (Atmosfair, N.D.).

Whether hostel tourists will be able to afford carbon credits will simply depend on the cost, which currently differs greatly between companies with Atmosfair (N.D) charging CDN $110 for a

return trip from Toronto to London, while The Carbon Neutral Company only requires CDN $27.50 to neutralize emissions. This variation indicates that the carbon credit concept requires further research to standardize calculation methods and charges between companies, and validate monetary and CO_2 estimates. Carbon credits are not perfect, however as Atmosfair (N.D.) states "the environmental damage caused by the flight cannot be undone … however it is advisable to attempt [to fix] the problem, [rather] than rest on the ill-founded belief that by ignoring the problem it will miraculously solve itself". If emissions can truly be neutralized, carbon credits could indirectly assist in decreasing the flight impacts of hostel tourists, and in turn, their ecological footprints. However, according to Bohler et al. (2006), they should be viewed as a last resort and their marketing campaigns should continue to emphasize the need to change traveling behaviours in addition to offsetting one's traveling emissions.

The last solution for increasing flight sustainability, albeit not in the near future, is through refining aircraft design and behaviour through using lighter materials, increased engine efficiency and improved aerodynamic properties, possibly even in the form of flying wings. Although there are still many issues that need to be addressed, it is believed that by 2050, technological improvements could reduce fuel intensity by 30-40% (Akerman, 2005). A further decrease in aircraft impacts could also be possible through modifying flight characteristics. For instance, cruising at lower speeds would increase fuel efficiency, however, aside from the increase in passenger travel time, new aircraft would need to be designed and built for these lower speeds. Another proposal lies in lowering cruise altitudes to between 7.3 and 9.4 kilometers, where the warming effects of gases would be less noticeable. This change however, would require the air industry to reconfigure air space, which would be time-consuming and require immense international commitment and agreement (Akerman, 2005). In addition, the increased air density at this lower level could result in greater drag and therefore higher fuel use. Again, although the anticipated increase in aircraft fuel efficiency, from technological and behavioural changes is promising, these changes would need to be implemented in addition to other measures such as reducing traveling behaviour and paying environmental charges, in order for sustainability targets to be realized (Akerman, 2005).

5.4.3 Realizing a Smaller Backpacker Ecological Footprint

Having discussed the characteristics that contribute to smaller ecological footprints and having discovered that sustainable flight is currently only a distant hope, realizing a substantial decrease in backpacker ecological footprints appears relatively impossible, as their already low-impact style of traveling leaves little space for further changes. In the case of accommodation, backpackers already

average lower amounts of built space, and energy usage per person in comparison to more resource-heavy tourism sectors. It would be unrealistic to decrease these amounts further in most hostels, as it could cause over-crowding and dissatisfaction on the part of guests, which may cause them to stay elsewhere, whether or not the facility is simply being more environmentally friendly. Ultimately, there is a fine balance in maintaining a hostel business according to market demands, while also trying to preserve the environment. Certainly, there are other ways in which hostels can become more environmentally friendly, such as through introducing better waste management programs, or installing eco-friendly appliances. These changes could increase the sustainability of hostels, however whether they would result in considerable decreases in backpacker ecological footprints is doubtful. With regards to travelers' eating habits, changes could again be made to increase food sustainability, however, as food was also a minor aspect of guests' ecological footprints, a change to vegetarian, local or organic meals would probably not decrease footprints to sustainable levels. Similarly, changing activities to those that are nature-based and cheap or free, would not result in a sustainable footprint.

Of course, if one were to make changes in all areas, by staying in an environmentally friendly hostel, eating local and organic vegetarian meals, and only taking part in free, nature-based activities, it is probable that one's ecological footprint would be decreased by several hectares. However, these changes may still not be enough to realize sustainability goals. The problem simply lies in the immense size of transportation impacts and its resulting contribution to guests' ecological footprints. Although rail and bus are more sustainable modes of transportation, backpacker tourism is largely based upon international travel, which can often only occur through the use of aircraft. Even if ground transportation is possible, perhaps from Canada to the United States or within Europe, environmentally friendly transport options may be more expensive, less comfortable, less well known, and more time-consuming. As sustainable flight is clearly little more than a vision for the future, there may not currently be any effective solutions for decreasing backpacker ecological footprints to sustainable levels. The solution may simply lie as a question in the individual consciences of backpackers: "To travel or not to travel?"

5.4.4 Backpacking as a form of Sustainable Tourism

Having established that backpacker tourism, although more eco-friendly than some other types of tourism, is indeed environmentally unsustainable, it is unrealistic in numerous ways to state that it should be ceased. Although the immense transportation may be damaging towards the environment, one must remember that sustainability is a three-tiered concept and relates not only to the environment but also to social and economic factors. As backpackers are generally more interested in traveling cheaply and

living the local lifestyle than being immersed in traveling luxuries (Locker as cited in Scheyvens, 2002), they are lower maintenance than many other tourist sectors. Therefore, for countries that are not yet developed enough to satisfy moneyed tourists, backpackers can prove an important source of revenue (Scheyvens, 2002). Although they spend less per day than the average tourist, their longer stays often result in greater overall expenditures which are spread over large areas, thereby helping remote or isolated communities, who luxury tourists may not visit (Haigh as cited in Scheyvens, 2002; Loker-Murphy and Pearce, 1995). In addition, as they often purchase locally produced goods and services, the economic leakage from backpacker tourism may be smaller than other tourist sectors (Wilson, 1997; Hampton, 1998).

Their presence is also a vital revenue source for backpacker infrastructure, both in developed and undeveloped countries, such as hostels, backpacker tour operators and transportation companies. Therefore, although environmentally unsustainable, backpacker tourism can contribute to social and economic sustainability, and a sudden decrease in this market sector could have devastating effects on the revenues of geographical areas, countries and businesses. Keeping this fact in mind, chapter 6 will provide ideas that could be implemented by hostels and their guests, in order to enable backpacker tourism to continue while being as environmentally sustainable as currently possible.

PART 3

This study has so far discovered that backpacker tourism, although more environmentally friendly than some other forms of tourism, is not an eco-friendly activity in itself. However, as backpackers clearly contribute to the economic and social sustainability of many countries (Scheyvens, 2002), ceasing this type of travel would be detrimental to many tourism revenues, as previously discussed. Rather, changes must occur that enable backpacker tourism to become as sustainable as possible, to allow these hostel tourists to continue contributing to country economies while treading lightly on the environment. Since transportation cannot yet be made sustainable, the responsibility of increasing this sector's sustainability appears to lie with those involved in the backpacker infrastructure, particularly hostels, which have daily contact with this tourism market. Not only can hostels decrease accommodation impacts, but they can also educate backpackers on more sustainable food choices, and ways in which they can reduce waste generation. However, before expecting hostels to take on this responsibility, an understanding needs to be developed of the incentives and barriers they face when trying to increase backpacker sustainability. This section will discuss managers' thoughts on sustainability in the backpacker sector, and the barriers they face when trying to 'green' their facilities.

5.5 Towards Sustainability: The Greening of Hostels

Since the early 1980's, along with the growth in understanding of sustainability and humanity's impact on the environment, businesses have been particularly targeted to decrease their ecological impacts (Brown, 1996). Although large corporations are often blamed for environmental pollution, small and medium enterprises contribute a substantial amount and are often wasteful of energy and materials, and ignorant of environmental laws and standards (Perez-Sanchez, Barton & Bower, 2003; Andrews, Stearne & Orbell, 2002). This is particularly an issue in non-manufacturing industries, such as the hospitality sector, due to them being poorly researched and less visible to the public (Ayuso, 2006).

The hostels in this study could certainly be considered small enterprises, however they generally appeared to be an exception to this negative stigma. Hostel managers indicated their concern for the environment, even more so than their guests and they emphasized their desire to further contribute to environmental efforts within the tourism sector. Although all hostels practiced environmental behaviours of some kind, ranging from recycling to energy efficient showerheads to reusing old furniture, only two of the hostels had an official environmental program in place to direct their 'green' efforts. Both of these hostels were associated with Hostelling International Canada (HI-Canada) and as a result, were required to adopt their environmental beliefs and mission. HI-Canada states on their website that **"**hostelling and a natural respect for the natural environment go hand in hand, and HI-Canada is a leader of environmental responsibility in the Canadian hospitality and tourism industry." Their environmental statement shown in Table 5.1 provides a well-rounded approach to sustainable living, and indicates their awareness for the environment and their striving to increase the 'environmental friendliness' of their hostels and guests.

TABLE 5.1 ENVIRONMENTAL STATEMENT OF HOSTELLING INTERNATIONAL CANADA

Preserving Canada's Natural Heritage*: we will reduce, and make continual progress towards eliminating the release of any substance that may cause environmental damage to the air, water, the earth or people.*

Eco-efficiency in Facilities, Products and Services*: we will strive to change our consumption patterns by choosing cost-effective products and suppliers which eliminate, minimize or mitigate adverse environmental impacts.*

Sustainable Use of Natural Resources*: we will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve non-renewable natural resources through efficient use and careful planning.*

Reduction and Disposal of Wastes*: we will reduce, and where possible eliminate, waste through source reduction, re-use and recycling. All waste will be handled and disposed of through safe and responsible methods.*

Risk Reduction*: we will strive to minimize the environmental, health and safety hazards to our staff and volunteers and to the communities we serve, or in which we operate, through safe technologies, facilities and operating procedures, and by being prepared for emergencies.*

Information and Education*: we will build awareness and share information to enable effective implementation of our environmental policies and practices. We will encourage our hostel guests to support the Canadian Code of Ethics for Tourists. We will keep hostellers, members, the Canadian public, and the international community, informed in a timely manner, of HI-C's role in environmental Stewardship.*

Of course, adopting a formal environmental program like that of HI-Canada's will not automatically transform a hostel into a sustainable and green facility. Likewise, hostels without visible environmental statements can still perform exceptionally well with regards to environmental practices, perhaps even above the level of those with formal statements. In terms of environmental behaviours in this study, the hostels without formal environmental programs appeared to be on par with the hostels who had adopted the HI statement. As such, a formal environmental mission may not be necessary where there is a natural interest in environmental issues, but it certainly can provide direction for hostel staff who are interesting in 'greening' their facilities but are unsure of which direction to take.

Whether a formal environmental program will succeed very much depends on the level of concern for the environment that is held by the hostel manager and staff, and whether sufficient resources, such as time, money and leadership are available for a program's implementation and maintenance. In this research, managers' levels of concern were high, however a lack of general resources was preventing them from furthering the sustainability of their hostels. Without these resources, managers may have good intentions, but an inability to succeed in a sustainable manner.

5.5.1 Barriers to Adopting Environmental Practices

Through this research, it was found that most hostels were being prevented from furthering their green efforts, or implementing formal environmental programs due to a lack of time and money. These findings are consistent with those in previous literature where one of the main factors preventing businesses from adopting environmental behaviours is cost, with the prevailing belief being "economic profitability over other considerations" (Ayuso, 2006, p. 211). Firth and Hing (1999) found in an Australian study that some environmentally aware hostel managers were simply unable to implement more 'green' practices due to high initial costs. Unfortunately, environmental products and equipment tends to be more expensive than regular products and in previous literature, managers have balked at the high initial costs, due to their need for short term returns in order for their business to be sustained (Bentley, 2007). In hostel situations, where accommodation prices are low in comparison to other tourism sectors, with some hostels possibly operating in a non-for-profit manner, the need for quick returns on investments is understandable. This concern was definitely expressed by the hostel managers in this study, many of whom realized the long-term advantages of environmental projects, but had to place priority on other issues, which they knew would attract customers and therefore ensure the continued existence of the facility. As a result of cost issues, most of the environmental behaviours practiced in hostels were convenient, free or cheap, and easy to maintain and install.

The other main issue preventing hostel managers from increasing their hostels' eco-friendliness was the time commitment. Unfortunately, time and effort are usually preserved exclusively for the continued economic survival of a company (Vernon et al., 2003) and the adoption of environmental behaviours is often influenced by an individual's perception of whether they have enough of these resources to implement green practices into their business (Barr, 2003). Running a hostel is a 24/7 commitment that only becomes more busy and taxing on weekends and holidays. Several of the managers in this study owned and managed their own facilities, requiring them to act as front desk receptionist, housekeeper, cook, handy-man and social activity organizer simultaneously every day of the week. Although the larger hostels were able to employ staff, the workload increased with the larger number of guests. As a result, time availability was a very evident barrier to the adoption or maintenance of environmental projects in the sample's hostels.

Past literature also cites a lack of awareness as a factor that prevents businesses from fully embracing environmental practices and sustainability beliefs into their operations (Vernon et al., 2003). In the hotel sector, Ayuso (2006) states that managers have a weak understanding of sustainable

development concepts and see environmental unsustainability as a threat to tourism's economic future, rather than a problem in itself. Alternatively, they may be fully aware of environmental issues but may lack knowledge on new developments in environmental management (van Hemel & Cramer, 2002). Clearly however, this lack of awareness was not a major problem in this study, as many managers were aware of and concerned about environmental issues, perhaps not specifically in relation to their particular hostel, but regarding businesses in general. In discussion with managers, many had researched certain environmental products such as cleaning materials, and/or had ordered information on specific brands that seemed cost-efficient. As their awareness surrounding the environment was high, they were also able to provide good leadership to their staff, without which, environmental projects and decisions tend to dwindle or fail (Brown, 1996).

5.5.2 Green Hostels: A Competitive Advantage?

Having noted the issues of money and time that are barriers to adopting more environmental practices in these hostels, why should these managers persevere in greening their hostels? From a business standpoint, helping the environment is simply not enough, environmental projects must pay off through tangible and preferably short term savings (Brown, 1996). According to Ayuso (2006), energy efficient products enable managers to maximize their profits while enabling them to work towards a more environmentally friendly facility. The rising costs of energy, water and waste disposal are also a prime motive for some business owners to improve efficiency and implement cost-effective and environmentally friendly alternatives (Tzschentke, 2004). Reducing business operating costs are certainly appealing, however as money is already an issue with the sample's hostels, installing energy efficient products such as solar panels, or Energy star laundry machines may not be a possibility, when the return on investment may take several years to be fully realized. However, if becoming green is advantageous in terms of attracting customers and therefore increasing revenue, installing energy efficient products may be more worthwhile.

According to Khanna (2001), businesses may gain a competitive advantage through adopting environmental behaviours that offer increased public recognition, such as 'green' awards, press releases or publishing environmental reports and newsletters for public viewing. In addition, businesses can share their environmental commitment with the public through meeting and adhering to standards set by environmental organizations, and using their 'green' logos in promotions and advertising campaigns; a concept known as eco-labelling (Videras & Alberini, 2000). In the tourism world, eco-labelling tends to be associated with sustainable forms of tourism such as eco-tourism or alternative tourism, but it has

begun to slowly enter the backpacking sector. A great example is that of HI-Iceland, where hostels meeting certain environmental criteria are given permission to be called 'Green' hostels and are allowed to use their environmental logo (HI-Iceland, N.D). In the UK, several hostels have also fulfilled environmental requirements that allow them to be associated with the Green Tourism Business Scheme or to be awarded the European Eco-label.

This begs the question: is green marketing and eco-labelling effective in the tourism world? Furthermore, will hostels see a substantial return on investment if they make use of green marketing? According to Videras and Alberini (2000), and van Hemel and Cramer (2002), there is a relationship between a customer's choice of establishment and its environmental performance. This has been experienced by the U.K. tourism industry where British tourism operators stated economic benefits from foreign markets as the prime motive for introducing environmental practices into their businesses (Tzschentke et al., 2004). In the backpacking world however, the beliefs regarding a competitive advantage are not as clear. For instance, in a study conducted by Firth and Hing (1999) on Australian hostels, only 3% of backpackers ranked the implementation of eco-friendly practices as the most important factor influencing their hostel choice. Furthermore, the value of Eco-labels is questionable, as Sharpley (2001) states that travel decisions primarily take into account finances, facilities and marketing, before considering whether the tourism destination is accredited with an environmental association. As a result, since hostel tourists are primarily budget travelers, a hostel's impressive environmental performance, or Eco-logo may not necessarily guarantee a worthwhile return on investment if accompanied by an increase in accommodation prices.

This is certainly not a dead end however, as 25% of the tourists in Firth and Hing's (1999) study did indicate that they would choose an eco-friendly hostel over another if their environmental practices were advertised. This finding is certainly promising for the backpacker sector, however this possible slight increase in revenue still may not justify the high initial costs of implementing and maintaining environmental products such as solar panels. On the other hand, if backpackers would choose hostels based on cheaper environmental practices such as recycling, energy conservation, and the collection of used batteries, then advertising environmental practices would certainly be very worthwhile and may provide somewhat of a competitive advantage over other less environmentally-friendly hostels. Either way, this is an area that requires further research in order to provide hostels with some advice and direction regarding the further implementation of environmental practices.

5.6 Discussion Summary

This chapter has attempted to discuss the implications of this study's findings, as they relate to previous literature, other tourism sectors and sustainability. In general, the study sample was found to be a strong reflection of backpackers, as recorded in previous literature. The sustainability of their traveling lifestyle was measured through the ecological footprint, to determine whether backpacker tourism is in fact environmentally friendly, as speculated by Scheyvens (2002). Based on the results of several other studies, it appears that backpacker tourism is substantially more environmentally friendly than certain other types of tourism. However, this can only be stated with the acknowledgement that conducting direct comparisons between different EF studies is difficult, due to differences in traveling behaviours and EF calculation methodologies. Regardless of this positive finding, most backpacker ecological footprints were found to be considerably larger than those deemed sustainable, and also those produced by residents of their home countries. Therefore, although backpacker tourism may be more environmentally friendly than other types of international tourism, the general reliance on long-haul transportation causes it to be largely unsustainable with regards to the natural environment.

As backpacker ecological footprints without transportation impacts were almost unsustainable, the question arose of whether sustainability could even exist in the realm of tourism. The concept of sustainable tourism continues to be debated with regards to its definitions and goals, and several noted researchers believe tourism in general to simply be an unsustainable activity. In an attempt to ascertain whether backpacker tourism could at some point become more sustainable, certain characteristics that contribute to small ecological footprints were discussed. Although small changes could be made, it was determined that a substantial decrease in backpacker ecological footprints would be largely impossible without a dramatic reduction in transportation impacts. Research on sustainable transportation is continually progressing, however it appears that sustainable flight is still only a work-in-progress. As a result, international travel can not yet be conducted in an emission-free manner. This is problematic since backpacker tourism is based on international concepts, and as a result, it appears that decreasing ecological footprints to a sustainable level is currently impossible, unless the choice is made to simply not take part in overseas or long-distance travel.

However, although not environmentally friendly, backpacker tourism does contribute to economic and social sustainability, and a decline in backpacker tourists could be detrimental to economies and businesses. As such, where pure sustainability is not an option, efforts must rather focus on making minor changes that enable this tourism sector to be as sustainable as currently possible. It was

suggested that this responsibility should be embraced by the backpacker infrastructure and hostels in particular, who come into daily contact with these backpackers. However, this suggestion was made with the understanding that 'greening' a hostel requires much time and money, and further research must be conducted to determine if environmental investments will result in worthwhile revenue increases for the hostels involved.

Chapter Six

6. CONCLUSION

In recent years, the documentation of tourism impacts on the environment (Neto, 2003; Ytterhus & Eligh, 1999; Gossling, 2000; Bohler, Grischkat, Haustein & Hunecke, 2006) has opened the door for the development of more sustainable forms of tourism, such as eco-tourism and alternative tourism. Although well intentioned, the concept of sustainable tourism is fraught with difficulties, and remains vague on what is to be achieved and how progress should be made in a sector that ultimately relies on many different industries, from manufacturing to accommodation and transportation. As a vague and ambiguous term, a further frustration lies in how sustainable tourism can be accurately measured, when every tourist travels in a slightly different manner, to and from varying destinations. A possible indicator lies in the ecological footprint which, although replete with constraints and assumptions that limit its accuracy, can provide a numerical area-based indication of the ecological requirements of tourism, enabling tourists to measure their travelling lifestyles against that which is understood to be sustainable (Wackernagel & Yount, 1998).

As tourism contains much variation with regards to choices, behaviours and activities, it can be expected that certain types of tourism will be more or less ecologically costly than others. In past literature, it has been suggested that backpacker tourism, due to its low-maintenance style of traveling, flexibility and low budgets, may be more environmentally friendly than tourism sectors where guests require more luxuries and amenities (Scheyvens, 2002). As this speculation has not been knowingly proven in previous literature, this study attempted to measure the impacts of backpacker tourism in Ontario and Quebec through the use of the ecological footprint tool, to determine if backpackers are in fact environmentally friendly travellers. Not only did the ecological footprint indicator enable backpacker tourism to be compared to other tourism sectors with regards to ecological requirements, but it also allowed for a comparison with general sustainable living. As such, this study builds on previous literature regarding the ecological footprint as a sustainability indicator, the sustainability of backpacker tourism and the characteristics of the backpacker sector in Ontario and Quebec. Furthermore, it provides a foundation from which further backpacker studies can be conducted with regards to backpacker tourism and/or sustainability.

6.1 Backpacker Tourism in Ontario and Quebec

Backpacker tourism in Ontario and Quebec appears to strongly mimic that of previous literature and well as that experienced by the researcher in other parts of the world. As expected with a tourism sector that contains much heterogeneity, the sample included people from many different countries with a wide repertoire of languages, traveling behaviours and itineraries. These relatively young tourists were passionate travelers who desired adventure and unique experiences while maintaining a sense of flexibility and freedom.

According to several current or former managers of backpacker hostels, backpacking activities in Ontario and Quebec used to be distributed relatively equally around each province. However in recent years, and for yet unknown reasons, these tourists have gravitated towards urban areas, forcing many rural or suburban hostels to close. As such, managers indicated that current backpacker tourism in Ontario and Quebec generally consists of fast-paced city hopping along the southern border, between the popular destinations of Niagara Falls, Toronto, Ottawa, Montreal and Quebec City. Although other smaller destinations may be visited and countryside excursions may occur to places such as Algonquin Park, backpacking activities and infrastructure is believed by hostel managers to be generally limited to this main tourist corridor

The question therefore is what has caused this change? As backpackers are known to have a preference for being off the main tourist track (Poon as cited in Hyde & Lawson, 2003), their scarce existence in rural areas is perplexing. One questions whether, due to vast distances, they simply no longer have the time to deviate from major attractions. This certainly could be possible, since based on this study's findings, shorter backpacking-type holidays appear to be a growing phenomenon. However, perhaps it's also due to poor or costly public transportation opportunities outside of urban areas. Or maybe these backpackers simply are unaware of what the more rural areas have to offer. Is it simply a case of developing more effective marketing campaigns to better educate them about the beauties of cottage country, Mount Tremblant, and the vast wilderness that is northern Ontario and Quebec? The speculations could be endless, and as of yet, there appears to be no direct answer. Therefore, further research needs to be conducted on backpackers' perceptions of Ontario and Quebec's rural areas, their reasons for not deviating from the main tourist trail and ways in which backpacking tourism outside this tourist corridor could once again, be revived.

6.2 The Ecological Footprint of Backpacker Tourism

The findings of this study indicate that although not environmentally friendly according to the ecological footprint's fair earth share concept, backpacker tourism appears to be considerably more environmentally sustainable than some other international tourism sectors that rely more heavily on resources, or in which guests expect more luxuries and amenities. However, this statement remains questionable as backpacker tourism contains much variation in traveling behaviours, itineraries and distances traveled. Therefore, depending on the choice of destination, the resulting traveling distance and the mode of transportation used to get there, a backpacker's ecological footprint could be much greater in size than perhaps tourists who stay closer to home at resorts or hotels.

Although some backpackers in this study were domestic, the majority were foreign which aligns with the belief that backpacking is an international concept. As such, the ecological requirements for international transportation are immense, and in the case of this study, were the greatest contributor to respondents' ecological footprints. In comparison, accommodation, food, activity and waste impacts were relatively small, individually contributing little to backpacker footprints. This low use of resources indicates that backpacker tourists are generally low maintenance, and environmentally friendly at the destination. However, as tourism requires the movement of people from one location to another, transportation is a vital component and without doubt, must be included in discussions of backpacker tourism and sustainability.

Backpacker tourism's almost sole reliance on international transportation causes these tourists to generally have much larger ecological footprints than would be generated by the average resident in their home country. In addition, the large ecological requirements of international transportation, most often in the form of air travel, make decreasing the ecological footprint of this tourist sector markedly difficult. Although improvements could be made in the environmentally sustainability of hostels, eating habits and activities, the overwhelming transportation impacts may make these minor changes barely noticeable in ecological footprint calculations. As Gossling et al., (2002) state:

> "current efforts to make destinations more sustainable through the installation of energy-saving devices or the use of renewable energy sources can only contribute to marginal savings in view of the large amounts of energy used for air travel. Any strategy towards sustainable tourism must thus seek to reduce transport distances, and, visa versa, any tourism based on air traffic need per se to be seen as unsustainable" (p. 208)."

Therefore, true sustainability in a tourism sense appears to only be obtainable if transportation impacts can be substantially decreased, or even better, neutralized. This begs the question: is sustainable transportation a possibility? As backpacker tourism relies greatly on international transportation, this question was asked with regards to air travel. Unfortunately, it appears that while research is progressing on options such as sustainable fuels, energy efficient engines and carbon-offsetting programs, a multitude of problems and drawbacks prevents sustainable flight from being a realistic option in the near future. As a result, until sustainable flight is introduced, backpacker tourism, although well intentioned with its low use of resources at the destination, must for the most part be considered environmentally unsustainable.

6.3 Recommendations for Increasing the Sustainability of Backpacker Tourism

> "It is unlikely, therefore, that holidays involving air travel will ever be wholly sustainable, but they can be made more "responsible". It is therefore more useful to think about "responsible tourism" within the context of a wider sustainable development strategy". (WWF – UK, 2002, p. 13)

Having discovered that backpacker tourism is not as environmentally friendly as previously speculated (Scheyvens, 2002), it is doubtful whether this finding will discourage these travelers from continuing to explore the world. Respondents did express some level of concern for the environment during the study, however as indicated by the value-action gap concept (Gossling et al., 2003), "constraints concerning holiday travel are obviously less acceptable than constraints in everyday life" (Kosterke & Lessberg, as cited in Bohler et al., 2006). As such, although backpackers may not be willing to make drastic changes to their holiday behaviour, their level of environmental concern may encourage them to at least lessen their impacts once at the destination. This travel will still not be completely environmentally friendly if relying on air transportation, however any decrease in environmental impacts is beneficial in the attempt for a sustainable world. This section, keeping money and time constraints in mind, will therefore present some ideas that could not only increase the sustainability of backpacker tourism but would also enable backpacker-based businesses to continue developing revenue and serving the market, while being as environmentally friendly as currently possible.

Policy Recommendations for Hostels

- To increase transportation sustainability:
  - Promote discounted accommodation for guests arriving by bus or train (on presentation of tickets).
  - Provide paid parking only, to discourage guests from traveling by car. Indicate this before guests arrive to enable them to make alternate transportation arrangements.
  - Provide free pickups from train/bus stations to encourage guests to use these modes of transportation.
  - Organize a sheltered and safe bicycle storage area to encourage the use of bikes for sightseeing and transportation.
  - Provide bicycles for rent at inexpensive prices.
  - Organize a ride share program for those looking to carpool to destinations or share taxis to departure points.
  - If developing partnerships with transportation companies, work with ones that are willing to offset their emissions through carbon credit programs or other environmentally friendly programs.
  - Encourage longer stays through incentives, to disperse transportation impacts over longer periods of time (4^{th} night free, discounted activity on 5^{th} day etc.)

- To increase accommodation sustainability:
  - Use recycled materials when furnishing or renovating the hostel.
  - Use eco-friendly paint/carpet (low VOC/recycled) when building or renovating.
  - Provide clotheslines for guests to dry clothes without using dryers.
  - Wash linens a maximum of once a week for long-staying guests, but provide new guests with fresh linens.
  - Use 'green' toilet paper, paper towels and tissues around the hostel if needed.
  - Use natural cleaners around the hostel, and provide natural dish soap in kitchens for backpacker use.
  - Provide natural soap/shampoo for backpackers at a reasonable price.
  - Install low flow faucets (timed faucets) and showerheads to decrease water usage.
  - Harvest rainwater in barrels for use in gardens, toilets, kitchens etc.
  - Install environmentally friendly light bulbs throughout hostel.
  - Instill dimmers/timers on light switches to decrease energy usage.

- Limit electricity usage during nighttime hours to small, back-up lights in bathrooms and hallways.
- Turn off computers and energy using devices when reception is closed.
- Encourage backpackers to bring their own headlamps to use during limited electricity hours.
- Promote businesses/companies that are eco-friendly/sustainable. Possible discounted accommodation/free internet time/free bike rental etc. for those who have used these companies (on presentation of a receipt).
- Provide brochures, books, magazines and movies on environmental topics. Have a weekly or monthly environmental documentary night.

- To increase food sustainability:
  - Develop a small-scale compost facility for organic waste – if facilities are not available for composting on property, check local businesses/neighbours/garden centres if they would like the compost.
  - Develop an organic vegetable garden for use in hostel meals. Fruit/vegetables can also be sold to backpackers at reasonable prices.
  - Encourage guests to work in the vegetable garden or maintain the compost facility for discounted accommodation or 'hostel miles' to be used at the hostel bar or for internet time etc.
  - Develop partnerships with natural/organic food stores whereby guests receive discounts on food products (on presentation of hostel receipt) in return for promoting the stores to guests and enabling the selling of limited store products within hostel.
  - Provide maps to eco-friendly food stores and farmers markets.
  - Organize a weekly hostel-wide free tour of the local farmers' market for guests to buy their food, while socializing with others. Combine it with a sightseeing activity or pub visit.

- To increase activity sustainability:
  - Promote local sightseeing/attractions within walking distance.
  - Promote free activities, or free activity times (some museums etc. have 'free' days).
  - Encourage outdoor adventure companies to provide discounts to hostel guests who take part in nature-based activities in return for promoting the events throughout the hostel.
  - If guests want to take part in activities that require travel, encourage them to signup for an activity carpool.

- To decrease waste:
  - Provide clear signage to explain where garbage can be disposed of properly.
  - If alcohol bottles can be returned to the LLBO, encourage a group of backpackers to sort and to return the bottles, and split the refund among themselves.
  - Collect used batteries, guide books, cell phones, for recycling.
  - Provide recycling bins on every floor. Also in the kitchen, lobby, patio and bar areas.
  - Minimize the use of paper in the hostel reception. If needed, use 100% recycled eco-friendly paper.
  - Substitute paper towels with reusable and washable dishtowels.
  - Use reusable products in the kitchen. Eliminate disposable cutlery/crockery.
  - Encourage guests to sort through garbage and reclaim recyclable materials in return for discounted accommodation or 'hostel miles'.

6.4 Further Research

Although this study provides a relatively clear indication of the environmental sustainability of backpacker tourism, many areas remain open for further research and development. Simply reproducing this study on a year round basis would provide better information on the ecological requirements of backpacker tourism throughout the seasons. Since occupancy rates generally fall during the colder months and heating becomes an important factor, one could expect ecological footprints to be considerably different to those generated in this study. In addition, as this research solely focused on backpacker tourists in Ontario and Quebec, a greater understanding of the Canadian backpacker market could be gained by developing a larger and more varied sample throughout the country. As sustainability is a continually developing concept, reproducing this study in future years would enable it to be conducted in greater detail with better information on the exact ecological requirements of different types of activities. Furthermore, ecological footprint calculators are continually being updated and future versions, particularly that for Ecological Footprint 2.0, may be able to account for a wider variety of building and construction materials, local and organic food, water usage and hybrid or electrically powered vehicles, thereby providing a greater amount of accuracy.

Having discovered through this study that backpacker tourism is not environmentally sustainable, it would be interesting to measure the reaction from backpackers to this information and determine whether, based on their average traveling impacts, they would be willing to change their behaviours or reconsider their traveling plans. Similarly, to determine what sort of changes would result in more

sustainable footprints, the development and comparison of different backpacker travelling scenarios would be useful. These could incorporate the use of carbon credits, environmental charges, local and organic food and different trips lengths among others. By measuring the ecological footprint of several different scenarios, a better picture would be developed of the type of travel for which backpackers and backpacker infrastructure should strive in the pursuit of total sustainability. An excellent example of this sustainable scenario development can be seen in the WWF-UK's (2002) Holiday Footprint report.

A particularly useful research topic lies in determining whether backpacker tourists are attracted to environmentally friendly options. Although businesses with greener behaviours are thought to have a competitive advantage (Khanna, 2001), this has yet to be determined on a wide scale in the backpacker industry. Therefore future studies could focus on whether backpacker tourists would respond positively to green marketing campaigns, and the types of environmental practices to which they would be attracted. This type of study would provide information to backpacker businesses as to what environmentally friendly additions would be assured to produce short or long-term returns on investments. In addition, this information could assist in the future development of an Eco-label awarding organization to commend those Canadian hostels and businesses that have made substantial progress in increasing their environmental sustainability.

REFERENCES

Akerman, J. (2005). Sustainable air transport – on track in 2050. *Transportation Research Part D*, 10, 111-126.

Andrews, S. K. T., Stearne, J., Orbell, J. D. (2002). Awareness and adoption of cleaner production in small to medium-sized businesses in the Geelong region, Victoria, Australia. *Journal of Cleaner Production*, 10, 373-380.

Atmosfair, (N.D.) *The Emissions Calculator*. Retrieved Jan 15, 2008 from https://www.atmosfair.de/index.php?id=5&L=3October 23, 2007

Ayala, H. (1995). Ecoresort: a 'green' masterplan for the international resort industry. *International Journal of Hospitality Management,* 14, 351-374.

Ayuso, S. (2006). Adoption of Voluntary Environmental Tools for Sustainable Tourism: Analysing the Experience of Spanish Hotels, Corporate Social Responsibility and Environmental Management, 13, 207-220.

Barr, S. (2003). Strategies for sustainability: citizens and responsible environmental behaviour. *Area*, 35, 227-240.

Becken, S., Frampton, C., Simmons, D. (2001). Energy Consumption Patterns in the Accommodation Sector – The New Zealand Case. *Ecological Economics*, 39, 371-386.

Bentley, R. (2007, October 11). What Price Going Green? *Caterer and Hotelkeeper*, 50-52.

Berry, S., Ladkin, A. (1997). Sustainable tourism: a regional perspective. *Tourism Management*, 18, 433-440.

Bohler, S., Grischkat, S., Haustein, S., Hunecke, M. (2006). Encouraging environmentally sustainable holiday travel. *Transportation Research Part A*, 40, 652-670.

Brown, M. (1996). Environmental policy in the hotel sector: "green" strategy or stratagem? *International Journal of Contemporary Hospitality Management,* 8, 18-23.

Butler, R. (1993). Tourism: An Evolutionary Perspective. In J. Nelson, R. Butler, and G. Wall. *Tourism and Sustainable Development: Monitoring, Planning, Managing* (pp 27-43). Waterloo: Heritage Resources Centre, University of Waterloo.

Butler, R. (1999). Sustainable Tourism: a state-of-the-art review. *Tourism Geographies*, 1, 7-25.

Canadian Tourism Commission. (2005). *2005 Facts and Figures Year Review*. Retrieved March 29, 2007 from http://www.corporate.canada.travel/docs/research_and_statistics/stats_and_figures/YearReview_2005_eng_Web_letter.pdf

Carbon Planet (2006). *Carbopedia – Carbon credits*. Retrieved Oct 25, 2007 from http://www.carbonplanet.com/home/carbon_credits_faq.php

Cohen, E. (2003). Backpacking: Diversity and Change. *Tourism and Cultural Change*, 1, 95-108.

Constantino-David, K. (2001). Unsustainable Development: The Philippine Experience. *Development in Practice*, 11, 232-241.

Creswell, J. (2003). *Research Design*. California: Sage Publications, Inc.

D'Anjou, A. (2004). *Youth Tourism in Canada. A situational analysis of an overlooked market.* Retrieved February 8, 2006 from http://www.omca.com/resource/document/Youth-Travel-Consortium-of-Canada-Report-FINAL.pdf?category-id=4

Firth, T., Hing, N. (1999). Backpacker hostels and their guests: attitudes and behaviours relating to sustainable tourism. *Tourism Management*, 20, 251-254.

Ferguson, A, R, B. (1999). The logical foundations of ecological footprints. *Environment, Developments and Sustainability*. 1, 149-156.

GazMetro (2007). *Example Calculations*. Retrieved Nov Oct 25, 2007 from http://www.uniongas.com/aboutus/regulatory/rates/residential/m2CI.pdf

Global Footprint Network (2006). *Ecological Footprint and Biocapacity – Technical Notes: 2006 Edition*. Retrieved Feb 22, 2007 from http://www.footprintnetwork.org/gfn_sub.php?content=datamethods

Global Footprint Network (2007). *National Footprint Accounts*. Retrieved March 23, 2008 from http://www.footprintnetwork.org/gfn_sub.php?content=national_footprints

Gossling, S. (2000). Tourism- sustainable development option? *Environmental Conservation*, 27, 223-224.

Gossling, S., B., Hansson, C., Horstmeier. O., Saggel, S. (2002). Ecological footprint analysis as a tool to assess tourism sustainability. *Ecological Economics*, 43, 199-211.

Hampton, M. (1998). Backpacker Tourism and Economic Development. *Annals of Tourism Research*, 25, 639-660.

Hecht, J. & Martin, D. (2006). Backpacking and hostel-picking: an analysis from Canada. *International Journal of Contemporary Hospitality Management*, 18, 69-77.

Holden, E., & Hoyer, K. G. (2005). The ecological footprints of fuels. *Transportation Research Part D,* 10, 395-403.

Holland L. (2003). Can the Principle of the Ecological Footprint be Applied to Measure the Environmental Sustainability of Business? *Corporate Social Responsibility and Environmental Management*, 10, 224-232.

Hostelling International. (2008). About *Hostels*. Retrieved April 10, 2008 from http://www.hihostels.com/web/a-faq.en.htm#105

Hostelling International Iceland. (n.d). *Green Hostels*. Retrieved March 15, 2008 from http://www.hostel.is/displayer.asp?cat_id=204

Hunter, C. (1997). Sustainable Tourism as an adaptive Paradigm. *Annals of Tourism* Research, 24, 850-867.

Hunter, C. (2002). Sustainable Tourism and the Touristic Ecological Footprint. *Environment, Development and Sustainability*, 4, 7-20.

Hunter, C., Shaw, J. (2007). The ecological footprint as a key indicator of sustainable tourism. *Tourism Management*, 28, 46-57.

Hyde, K. & Lawson R. (2003). The Nature of Independent Travel. *Journal of Travel Research*, 42, 13-23.

Hydro One (2007). *Small Business Customers Rates and Pricing*. Retrieved Oct 17, 2007 from http://www.hydroonenetworks.com/en/customers/small_business/rates_pricing_kWhandkW/default.asp

Hydro-Quebec (2007). *Understanding the Bill and Rates – Small Power*. Retrieved October 19, 2007 from http://www.hydroquebec.com/business/typique/structure_tarifg.html

IESO (2007). *IESO Releases 2006 Generation and Consumption Figures*. Retrieved October 14, 2007 from http://www.ieso.ca/imoweb/media/md_newsitem.asp?newsID=3232

International Panel on Climate Change. (1999). *Aviation and the global atmosphere. A special report of IPCC working groups I and III.* Cambridge, U.K.: Cambridge University Press.

International Solar Energy Society. (2002, July/Aug). Sustainable Transport. *Refocus, 34-37.*

Johnson, D. (2002). Environmentally sustainable cruise tourism: a reality check. *Marine Policy*, 26, 261-270.

Kanellos, M. (2008). *Biofuel takes flight with Virgin Atlantic*. Retrieved June 15, 2008 from http://news.cnet.com/8301-11128_3-9877583-54.html

Khanna, M. (2001). Non-mandatory Approaches to Environmental Protection. *Journal of Economic Surveys*, 15, 291-324.

Lee, K, F. (2001). Sustainable tourism destinations: the importance of cleaner production. *Journal of Cleaner Production*, 9, 313-323.

Lenzen, M. (1999). Total requirements of energy and greenhouse gases for Australian transport. *Transportation Research Part D*, 4D, 265-290.

Loker-Murphy, L. & Pearce, P. (1995). Young Budget Travelers: Backpackers in Australia. *Annals of Tourism Research*, 22, 819-843.

Lu, C., & Morrell, P. (2001). Evaluation and implications of environmental charges on commercial flights. *Transport Reviews*, 21, 377-395.

Mapquest Inc. (2007). Directions. Retrieved April 14, 2008 from http://www.mapquest.com/directions

McNinn, S. (1997). The challenge of sustainable tourism. *The Environmentalist*, 17, 135-141.

Ministry of the Environment. (2004). Ontario's 60% Waste Diversion Goal – A discussion paper. Ontario: Queen's Printer for Ontario.

Mohsin, A. & Ryan, C. (2003). Backpackers in the Northern Territory of Australia – Motives, Behaviours and Satisfactions. *International Journal of Tourism Research*, 5, 113-131.

Murphy, L. (2001). Exploring Social Interactions of Backpackers. *Annals of Tourism Research*, 28, 50-67.

Nash, R., Thyne, M. & Davies, S. (2006). An investigation into customer satisfaction levels in the budget accommodation sector in Scotland: A case study of backpacker tourists and the Scottish Youth Hostels Association. *Tourism Management*, 27, 525-532.

Neto, F. (2003). A new approach to sustainable tourism development: Moving beyond environmental protection. *Natural Resources Forum*, 27, 212-222

New Zealand Ministry of Tourism. (2006). *International Visitor Survey*. Retrieved March 1, 2007 from http://www.tourismresearch.govt.nz/Datasets/International+Visitor+Survey/Data+and+Analysis/

Official Airline Guide. (2008). *About OAG*. Retrieved April 14, 2008 from http://www.oag.com/oagcorporate/

Ontario Ministry of Transportation. (2008). Official Road Map of Ontario. Concord, ON: Queen's Printer for Ontario.

Owram, K. (2007, July 16). Recycling rates vary greatly across nation. *Toronto Star.* Ontario: Toronto Star.

Parayil, G. (1996). The 'Kerala model' of development: development and sustainability in the Third World. *Third World Quarterly: Journal of Emerging Areas*, 17, 941-954.

Perez-Sanchez, D., Barton, J. R., Bower, D. (2003). Implementing Environmental Management in SMEs. *Corporate Responsibility and Environmental Management*, 10, 67-77.

Redefining Progress (2003). *Household Ecological Footprint Calculator v. 3.2*. Retrieved March 29, 2007 from http://www.redefiningprogress.org/programs/sustainabilityindicators/ef/ef_household_0203.xls

Redefining Progress. (2005). *Ecological Footprint of Nations*. Retrieved April 10, 2008 from http://www.ecologicalfootprint.org/Excel/Footprint%20of%20Nations%202005%20(2).pdf

Rees, W. E. (1992). Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanization*, 4, 121-130.

Ross, G. (1993). Ideal and Actual Images of Backpacker Visitors to Northern Australia. *Journal of Travel Research*, 32, 54-57.

Scheyvens, R. (2002). Backpacker Tourism and Third World Development. *Annals of Tourism Research*, 29, 144-164.

Scutt, C. (1997). ASTA Panelists Offer Pointers on Booking Independent Travel, *Travel Weekly*, 56 (24). Retrieved March 1, 2007 from http://www.travelweekly.com/articles.aspx?articleid=5874

Senbal, M., McDaniels, T., Dowlatabadi, H. (2003). The ecological footprint: a non-monetary metric of human consumption applied to North America. *Global Environmental Change*, 13, 83-100.

Sharpley. R. (2001). The Consumer Behaviour Context of Ecolabelling. In S. Font, and R.D. Buckley (Eds.), *Tourism Ecolabelling: Certification and Promotion of Sustainable Management*. New York: CABI Publishing

Sorensen, A. (2003). Backpacker Ethnography. *Annals of Tourism Research*, 4, 847-867.

Statistics Canada (2005). *Percentage of electricity generation by utility companies, by province and energy source: Table 4*. Retrieved May 22, 2008 from http://www.statcan.ca/english/research/11-621-MIE/2007062/tables/table4.htm

Statistics Canada (2005). *Human Activity and the Environment – Solid Waste in Canada*. Retrieved Oct 1, 2007 from http://www.statcan.ca/english/freepub/16-201-XIE/0000516-201-XIE.pdf

The Clear Network. (2006). *Residential Solid Waste Diversion Rate*. Retrieved Oct 3, 2007 from http://www.clear.london.ca/Solid_Waste_Management_Diversion.html

Turner, V. (1973). The center out there: Pilgrim's goal. *History of Religions*, 12, 191-230.

Tzschenke, N., Kirk, D., Lynch, P. A. (2004). Reasons for going green in serviced accommodation establishments. *International Journal of Contemporary Hospitality Management*, 16, 116-124.

Union Gas (2007). *Current Rates and Schedules – Other Commercial and Industrial Customer Rates.* Retrieved Oct 26, 2007 from http://www.uniongas.com/aboutus/regulatory/rates/ratesindex.asp#SmallCommercialRates

United Nations Development Program. (2006). *Human Development Report*. Retrieved March 1, 2007 from http://hdr.undp.org/hdr2006/

United States Department of Energy (2007). *Fuel Economy*. Retrieved April 14, 2008 from www.fueleconomy.gov

United States of America Food and Drug Administration Code of Federal Regulations (2002). Food Labelling: Reference amounts customarily consumed per eating occasion, Title 21, Volume 2, Part 101.12. Retrieved April 3, 2007 from http://www.access.gpo.gov/nara/cfr/waisidx_02/21cfr101_02.html

Van Hemel, C., Cramer, J. (2002). Barriers and stimuli for ecodesign in SMEs. *Journal of Cleaner Production*, 10, 439-453.

Vernon, J., Essex, S., Pinder, D., Curry, K. (2003). The 'Greening' of Tourism Micro-businesses: Outcomes of Focus Group Investigations in South East Cornwall. *Business Strategy and the Environment*, 12, 49-69.

Videras, J., Alberini, A. (2000). The appeal of voluntary environmental programs: which firms participate and why? *Contemporary Economic Policy*, 18, 449-461.

Wackernagel, M., Rees, W. (1996). *Our Ecological Footprint: Reducing Human Impact on the Earth*. Gabriola Island, BC: New Society Publishers.

Wackernagel, M., Yount, J. D. (1998). The Ecological Footprint: An indicator of Progress toward Regional Stability. *Environmental Monitoring and Assessment*, 51, 511-529.

Wackernagel, M., Yount, J. D. (2000). Footprints for sustainability: The next steps. *Environment, Development and Sustainability*, 2, 21-42.

Wardle, D. A. (2003). Global sale of green air travel supported using biodiesel. *Renewable and Sustainable Energy Reviews*, 7, 1-64.

Welford, R., Ytterhus, B., Eligh, J. (1999). Tourism and Sustainable Development: An Analysis of Policy and Guidelines for Managing Provision and Consumption. *Sustainable Development,* 7, 165-177.

White. T. (2000). Diet and the Distribution of Environmental Impact. *Ecological Economics*, 34, 145-153.

Wilson, D. (1997). Paradoxes of Tourism in Goa. *Annals of Tourism Research*, 24, 52-75.

World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: Oxford University Press.

World Tourism Organization, World Travel and Tourism Council and The Earth Council. (1996). *Agenda 21 for The Travel and Tourism Industry – Towards Environmentally Sustainable Development.* London, U.K.: World Travel and Tourism Council, World Tourism Organization and The Earth Council

World Tourism Organization (2005). *Tourism 2020 Vision*. Retrieved March 1, 2007 from http://www.world-tourism.org/facts/menu.html

World Wildlife Fund. (2000). *Living Planet Report 2000*. United Nations Environment Programme - World Conservation Monitoring Centre, Redefining Progress and The Centre for Sustainability studies, Gland: WWF.

World Wildlife Fund (2002). *Holiday Footprinting: A Practical Guide for Responsible Tourism.* Godalming: World Wildlife Fund U.K.

World Wildlife Fund (2006). *Living Planet Report 2006*. Retrieved Feb 14, 2006 from http://assets.panda.org/downloads/living_planet_report.pdf

APPENDICES

Appendix 1 – Thesis Pilot Letter

Dear:

Thank you for agreeing to be a participant in the pilot study for my Master's Thesis on The Ecological Footprint of International Backpackers in Ontario, under the guidance of Judie Cukier of the Department of Geography at the University of Waterloo. Your participation is greatly appreciated! The purpose of this thesis study is to discover the environmental effects of backpacker tourism in Ontario through using the Ecological Footprint (EF) tool. For the purpose of this study, information will be collected on backpackers' holiday accommodation, food, transportation and activity behaviours, to determine their contributions to backpackers' holiday ecological footprints. Their answers will be inserted into the EF calculator to determine the daily earth area (global hectares) they use during their holiday in Ontario. For more information about the ecological footprint please see: www.footprintnetwork.org or www.panda.org/livingplanet.

The questions for this pilot survey refer to travelling behaviours, socio-demographics and environmental concerns. The information you provide will not be used in the study. Rather, the purpose of this pilot study is to check the timing, accuracy and validity of the surveys. When answering the following questions, please indicate (if needed) where improvements could be made to wording to ensure questions are valid and reliable. The suggested changes will be incorporated into the surveys, which will then be distributed to backpackers throughout Ontario to collect the data for the ecological footprint calculations. Based on the findings, it is hoped that changes may be recommended to backpacker facilities and backpackers themselves to enable backpacker tourism in Ontario to become more environmentally friendly.

Your participation is voluntary, you may refrain from answering if you wish and you may withdraw from participating at any time. In addition, all data will be kept confidential and will be securely stored for two years, at which point it will be confidentially destroyed. If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me or my faculty supervisor by email or phone as given below. I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. If you have any comments or concerns resulting from you participation in this study, please contact Dr. Susan Sykes at 519 888 4567 Ext. 36005 or ssykes@uwaterloo.ca. Should you wish to discover the results of the study, you may contact me at the following email address and I would be happy to pass on a summary of my findings and recommendations. Thank you in advance for assisting me with my thesis research!
Sincerely,

Claire Purvis
backpackerfootprint@mail.com

Advisor: Judie Cukier
jcukier@fes.uwaterloo.ca

Department of Environmental Studies – Tourism Policy and Planning
University of Waterloo
200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1
1 519 888 4567

Appendix 2 – Hostel Letter and Consent Form

Dear Hostel Owner/Manager

I am a student at the University of Waterloo, completing a Master's of Applied Environmental Sciences with a major in Tourism Policy and Planning, under the guidance of Professor Judie Cukier from the Department of Geography. For my master's thesis, I am conducting a study on The Ecological Footprint of International Backpackers in Ontario to discover the environmental effects of backpacker tourism in our province. I would like to extend to you an invitation to become a participant of the study, and would also like to gain permission to survey some of your guests on the hostel premises.

If you choose to participate in this study, you will be requested to provide information on certain aspects of your hostel such as square footage, occupancy rates and environmental practices. One 30-minute meeting will be scheduled at your convenience to complete a brief survey and answer some interview questions on your environmental concerns, and suggestions for increasing the environmental friendliness of the Ontario's backpacker industry. The survey and interview questions will be emailed to you 2 weeks ahead of the scheduled meeting date to allow you time to gather the needed information, and to ensure that the interview is timely and efficient. In addition to gathering hostel information, I would like to survey 5-10 international backpackers at your hostel with regards to socio-demographic characteristics, travel behaviours, and environmental concerns. On completion of the surveys, all participants will receive a small token of appreciation. The information collected from hostels and backpackers will be converted into usable form and used to calculate backpackers' ecological footprints. It is hoped that the findings will be displayed in backpacker facilities, in an attempt to develop awareness of the environmental effects of backpacker travel, and to encourage more environmentally friendly practices.

There are no anticipated risks from this study, as all information provided by you and your guests will remain completely confidential and anonymous, you may decline to answer questions if you wish and withdraw from the study at any time by emailing me at the address below. No names will be included in the findings and the hostels will simply be described in terms of size, affiliation status and general geographic location in Ontario. With your permission, anonymous quotations may be used in the thesis or any publications. Anonymized information will be retained for 2 years and then confidentially destroyed. At the completion of the study, a summary of findings will be made available to all interested parties. This project has been reviewed by, and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. Should you have comments or concerns resulting from your participation in this study please contact Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, Ext. 36005 or ssykes@uwaterloo.ca. Please send a brief reply to the following email address to indicate your interest in participating. I thank you for your time and consideration.

Sincerely,

Claire Purvis
backpackerfootprint@mail.com
Department of Environmental Studies – Tourism Policy and Planning
University of Waterloo,
200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1
1 519 888 4567

Please return this consent form to Claire Purvis either by email: backpackerfootprint@hotmail.com or mail:

Claire Purvis
4204 Walkers Line
Burlington, Ontario,
L7R 3X4

Alternatively, please provide brief consent through the email above and I will collect this signed copy at the scheduled interview date.

I _____(name), owner/manager (circle one) of _____ (Hostel Name) agree to participate in the thesis study on The Ecological Footprint of International Backpackers in Ontario. I understand that I will be requested to provide information on this hostel that will be used in the thesis study to calculate the ecological footprint of backpackers. I have read the information in the consent and recruitment letters, and have had the opportunity to ask questions and receive answers about the details of the study. I am aware that I may withdraw from this study at any time without penalty and understand that the project has been reviewed and cleared by the Office of Research Ethics at the University of Waterloo.

I _____(name) also provide Claire Purvis with permission to survey backpackers for this study on the hostel premises. I understand that all the information provided by myself and my guests will be kept confidential and anonymous.

I agree to the use of anonymous quotations (circle one) YES NO

Signed: _____
Printed Name: _____
Date: _____

Appendix 3 – Hostel Survey

Hostel Identification Number: _____

1) Number of Beds in Hostel: _____

2) Total size of Hostel Buildings: _____ (square feet)

3) Total size of Hostel Property: _____ (square feet)

4) Occupancy Rate for this month: _____%

5) Average annual occupancy rate: _____%

ENERGY USE:

6) ***Please indicate the sources of power this hostel uses and the amount of energy used each month (kWh). If the amount of energy used is not available, please indicate the approximate energy costs per month ($).***

Month	**Electricity (kWh)**	**Natural Gas (m^3)**	**Other: _____**	**Other: _____**
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Annual Total				

WASTE:

7) ***Please mark an 'X' on the line(s) that best describe(s) the size of your garbage containers.***

____Small ____Medium ____Large ____X-Large ____XX-Large





8) ***How many of each size of garbage container does your hostel use?***

___ Small ___ Medium ___ Large ___ X-Large ___ XX-Large

9) ***How often are these containers emptied/collected?*** _____

10) ***On average, how full are they when emptied?*** _____%

ENVIRONMENTAL PRACTICES:

11) ***As hostel manager/owner, please indicate your level of concern regarding your impacts on the environment.***

Not at all concerned **Very Concerned**
1 2 3 4 5

12) Please indicate the behaviours this hostel practices with regards to the environment.

ENVIRONMENTAL PRACTICE	Always	Sometimes	Rarely	Never
Recycling: Bottles, cans				
Recycling: Paper, cardboard				
Recycling: Plastic				
Recycling: Other (please list):				
Composting food scraps				
Energy star appliances				
Energy star laundry machines				
Environmentally friendly light bulbs				
Composting toilets				
Limited electricity hours				
Energy efficient showers: efficient shower heads				
Energy efficient showers: coin or time operated				
Energy efficient showers: heat recovery drain pipe				
Buy locally made goods/products If yes, please list:				
Buy/serve local food				
Buy/serve organic food				
Serve vegetarian meals				
Collect rainwater for various uses				
Encourage backpackers to be environmentally friendly				
Support environmentally friendly or sustainable businesses				
Use of natural cleaning products				
Renewable energy purchased or generated				
Added insulation				
Other:				
Other:				
Other:				
Other:				

Questions:

1) Do you think the concept of backpacking in Ontario is environmentally friendly? Why or why not?

2) ***Are there obstacles preventing backpacker facilities such as hostels from becoming more environmentally friendly and if so what are they?***

3) Any ideas for how the Eco-friendliness of backpacker tourism could be increased?
Hostels →

Backpackers →

Transportation →

4) Do you think backpackers would be interested in learning about their environmental effects and in turn becoming more Eco-friendly in their travels?

5) Do you think backpacker facilities are interested in learning about their environmental effects and in turn becoming more Eco-friendly in their operations?

Additional Comments?

_____

_____

_____

_____

Appendix 4 – Hostel Feedback Letter

Thank you for agreeing to be a participant in the study on The Ecological Footprint of International Backpackers in Ontario. Your participation is greatly appreciated.

The purpose of the study is to discover the environmental effects of backpacker tourism in Ontario through using the Ecological Footprint (EF) tool. The EF is a quantitative measure of one's impact on the environment. For the purpose of this study, backpackers' hostel accommodation, food, transportation and activity choices will be considered in terms of the contribution they make to the backpackers' holiday ecological footprints. Their answers will be inserted into the EF calculator to determine the daily earth area (global hectares) they use during their holiday in Ontario. To enable all human beings to satisfy their needs of basic living (food, shelter, warmth etc), each individual should have an ecological footprint of approximately 2 global hectares per year; a value termed the "**fair earthshare**". Currently, however, residents of the United States, Canada and the United Kingdom average 9.6 gha, 7.6 gha and 5.6 gha per year respectively, while residents of India have a footprint of only 0.8 global hectares per year, indicating the unequal usage of the earth's resources. For more information about the ecological footprint please see: www.footprintnetwork.org or www.panda.org/livingplanet

This study, will evaluate the ecological footprint of international backpackers in Ontario. Based on the findings, changes may be recommended to hostels, backpacker transportation companies, and backpackers themselves, to enable backpacker tourism in Ontario to become more environmentally friendly. It is hoped that this information will then be displayed at backpacker facilities to enable backpackers to become aware of their environmental effects and to help them make choices to minimize their impact.

Should you wish to discover the results of the study, you may contact me at the following email address and I would be happy to pass on a summary of my findings and recommendations. All the information you provide will be completely confidential, and anonymity will be preserved. This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. In the event you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes at 519-888-4567, Ext. 6005.
Sincerely,

Claire Purvis
backpackerfootprint@mail.com
Department of Environmental Studies – Tourism Policy and Planning
University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada N2L 3G1
1 519 888 4567

Appendix 5 – Backpacker Letter

Dear Backpacker

I am a Masters student in the Department of Environmental Studies at the University of Waterloo. For my thesis, I am conducting a research study under the supervision of Professor Judie Cukier, on The Ecological Footprint of International Backpackers in Ontario. The Ecological Footprint (EF) is a quantitative measure of one's impact on the environment. For the purpose of this study, information will be collected on your holiday accommodation, food, transportation and activity behaviours, to determine their contributions to your holiday ecological footprint. Your answers will be inserted into the EF calculator to determine the daily earth area (global hectares) you use during your holiday in Ontario. To enable all human beings to satisfy their needs of basic living (food, shelter, warmth etc), each individual should have an ecological footprint of approximately 2 global hectares per year; a value termed the "**fair earthshare**". Currently however, the residents the United States, Canada and the United Kingdom average 9.6 gha, 7.6 gha and 5.6 gha per year respectively, while residents of India have a footprint of only 0.8 global hectares per year, indicating the unequal usage of the earth's resources. For more information about the ecological footprint please see: www.footprintnetwork.org or www.panda.org/livingplanet. As you are an international backpacker travelling through Ontario, your information is important to this study.

I would appreciate if you would answer the following questions which relate to your socio-demographics, your travel behaviours and your environmental concerns and practices (for example, what accommodations will you be using during your time in Ontario?). The survey will take approximately 10 minutes to fill out, and you will receive a token of appreciation on completion. Based on the study findings, it is hoped that changes may be recommended to backpacker facilities and backpackers themselves to enable backpacker tourism in Ontario to become more environmentally friendly. This information may also be displayed at backpacker facilities to enable backpackers to become aware of their environmental effects and to help them make choices to minimize their impact.

You may omit any question you prefer not to answer. There are no known or anticipated risks from participating in this study, and participation is voluntary and anonymous. All information you provide will be considered confidential. The information collected will be kept for 2 years in a secured location and then confidentially destroyed. If you have any questions about this study or would like to receive additional information, please feel free to contact Professor Judie Cukier at 519 888 4567 or jcukier@uwaterloo.ca. This study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at 519 888 4567 Ext. 36005 or ssykes@uwaterloo.ca. If you wish to discover the results of the study, you may contact me at the following email address and I would be happy to pass on a summary of my findings and recommendations. Thank you in advance for your interest in this study.

Sincerely,

Claire Purvis

backpackerfootprint@mail.com
Department of Environmental Studies – Tourism Policy and Planning
University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada N2L 3G1
1 519 888 4567

Appendix 6 – Backpacker Survey

Hostel Identification Number: _____

ACCOMMODATION

1) ***How many nights will you be spending at this hostel?*** _____

2) ***What other accommodations will you be using during your time in Ontario, and on average how long do you plan to stay at each type of accommodation? (Do not include your stay at this hostel)***

Accommodation Type	Length of Stay (nights)
Hostelling International Hostel	_____
Other Hostel	_____
Campground	_____
Bed and Breakfast	_____
Hotel	_____
Motel	_____
Private House	_____
Other: _____	_____

TRANSPORTATION

3) ***What was your previous location (city and country) before coming to this hostel)?***

City: _____ Country: _____

4) ***Please indicate the distance traveled in either kilometers or hours to reach this hostel from your previous location. Include car/bus travel to airport or train stations.***

	Hours	Kilometers
Car: Model/Year _____	_____	_____
(# of passengers including yourself =_____)		
Bus:	_____	_____
Train:	_____	_____
Airplane:	_____	_____
Moose Network:	_____	_____
Other: _____	_____	_____

5) ***What is your next destination after staying at this hostel (city and country)?***

City: _____ Country: _____

6) ***Please indicate the distance that you will travel in either kilometers or hours to reach your next destination. Include car/bus travel to airport or train stations.***

	Hours	Kilometers
Car: Model/Year _____	_____	_____
(# of passengers including yourself =_____)		
Bus:	_____	_____
Train:	_____	_____
Airplane:	_____	_____
Moose Network:	_____	_____
Other: _____	_____	_____

CONSUMPTION

7) ***Please indicate your consumption of the following items during your time at this hostel. If you are staying at this hostel for more than 7 days, please check/tick the per week box and indicate your average consumption over a period of 7 days. List amounts in the number of single servings. For example 2 glasses of milk/day over 5 days would equal 10 servings.***

☐ Per week

_____ Veggies, potatoes, fruit

_____ Bread

_____ Rice, cereals, noodles etc.

_____ Milk and Yogurt

_____ Ice cream, sour cream

_____ Cheese, Butter

_____ Eggs

_____Cigarettes (total number)

_____ Beans

_____ Pork

_____ Chicken/Turkey

_____Beef

_____Fish/Seafood

_____ Juice/Wine/Beer/Liquor

_____ Sugar

_____ Tea/Coffee

_____ Other (please list)_____

_____ Other (please list)_____

ACTIVITIES

8) ***Please list and describe 4 main activities in which you took part during your stay at this hostel. Activities can include sightseeing tours, outdoor activities, parties/pub nights etc. Please be specific.***

Activity # 1: _____ (provide company name if applicable)

Description:_____

_____

_____

Frequency of activity during your stay at this hostel:

_____ Once _____ Daily _____ times (total number during stay at this hostel)

Activity # 2: _____ (provide company name if possible)

Description:_____

_____

_____

Frequency of activity during your stay at this hostel:

_____ Once _____ Daily _____ times (total number during stay at this hostel)

Activity # 3: _____ (provide company name if possible)

Description:_____

_____

_____

Frequency of activity during your stay at this hostel:

_____ Once _____ Daily _____ times (total number during stay at this hostel)

Activity # 4: _____ (provide company name if possible)

Description:_____

_____

_____

Frequency of activity during your stay at this hostel:

_____ Once _____ Daily _____ times (total number during stay at this hostel)

COSTS

9) ***Please estimate the total cost (Canadian Dollars) of each of the following components of your holiday while in Ontario.***

Accommodation: $_____ Food: $_____

Transportation: $_____ Souvenirs: $_____

Other costs (please list): _____

ENVIRONMENTAL PRACTICES AND CONCERNS

10) ***Please circle the appropriate number that indicates your level of concern regarding your impact on the environment.***

Not at all concerned Very Concerned

1 2 3 4 5

11) ***Please mark an 'X' in the box that indicates the appropriate frequency with which you perform the following behaviours.***

BEHAVIOUR	Always	Sometimes	Rarely	Never
Recycle bottles and cans where possible				
Buy organic food				
Reduce the amount of waste you produce				
Support sustainable or environmentally friendly businesses				
Walk or cycle rather than using powered vehicles				
Travel by train or bus rather than car				
Share rental car with fellow travelers				
Use reusable storage containers rather than disposable				
Use tap water rather than bottled water				
Buy environmentally friendly goods/products				
Eat vegetarian meals				
Buy local food and products				
Talk to other travelers about environmental topics				

12) ***The following socio-demographic data will help us to learn about the international backpacking population in Ontario.***

Age:

- ❑ 18-20
- ❑ 21-24
- ❑ 25-29
- ❑ 30-34
- ❑ 35-40
- ❑ Over 40

Gender:

- ❑ Male
- ❑ Female

Usual home occupation:

- ❑ Student
- ❑ Employed Full time
- ❑ Employed Part time
- ❑ Retired
- ❑ Unable to work
- ❑ Unemployed

On average, how much money do you spend per day in Ontario? (CAN $)

- ❑ 0-25
- ❑ 26-50
- ❑ 51-75
- ❑ 76-100
- ❑ 101-150
- ❑ More than 150

Nationality: _____

Country of Residence: _____

Appendix 7 – Backpacker Feedback Letter

Thank you for agreeing to be a participant in the research study on The Ecological Footprint of International Backpackers in Ontario. Your participation is greatly appreciated!

The purpose of the study is to discover the environmental effects of backpacker tourism in Ontario through using the Ecological Footprint (EF) tool. The EF is a quantitative measure of one's impact on the environment. For the purpose of this study, information will be collected on your holiday accommodation, food, transportation and activity behaviours, to determine their contributions to your holiday ecological footprint. Your answers will be inserted into the EF calculator to determine the daily earth area (global hectares) you use during your holiday in Ontario. To enable all human beings to satisfy their needs of basic living (food, shelter, warmth etc), each individual should have an ecological footprint of approximately 2 global hectares per year; a value termed the "**fair earthshare**". Currently however, residents of the United States, Canada and the United Kingdom average 9.6 gha, 7.6 gha and 5.6 gha per year respectively, while residents of India have a footprint of only 0.8 global hectares per year, indicating the unequal usage of the earth's resources. For more information about the ecological footprint please see: www.footprintnetwork.org or www.panda.org/livingplanet

In addition to the information collected on your travelling behaviours, you will also be requested to answer questions on your socio-demographic characteristics and environmental concerns. The survey will take approximately 7 minutes to fill out, and you will receive a token of appreciation on completion. Based on the findings, it is hoped that changes may be recommended to backpacker facilities, and backpackers themselves to enable backpacker tourism in Ontario to become more environmentally friendly. This information may also be displayed at backpacker facilities to enable backpackers to become aware of their environmental effects and to help them make choices to minimize their impact.

Should you wish to discover the results of the study, you may contact me at the following email address and I would be happy to pass on a summary of my findings and recommendations. This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. In the event you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes at 519-888-4567, Ext. 6005. There are no risks from participating in this study as all the information you provide will be completely confidential. The information will be securely stored until completion of the thesis, at which point it will be destroyed.
Sincerely,

Claire Purvis
backpackerfootprint@mail.com

Advisor: Judie Cukier
jcukier@fes.uwaterloo.ca

Department of Environmental Studies – Tourism
Policy and Planning
University of Waterloo
200 University Avenue West
Waterloo, Ontario, Canada N2L 3G1
1 519 888 4567

Appendix 8 – Tourist Ecological Footprint Calculator and Supporting Data

Adapted from The Household Ecological Footprint Calculator (Redefining Progress, 2003)

CATEGORIES	Units	AMOUNT per month	AMOUNT per year	Dollars spent (mth)	FOSSIL ENERGY	CROPLAND	PASTURE	FOREST	BUILT-UP LAND	FISHERIES
1.-FOOD					**(results in uncalibrated global m2)**					
Veggies, potatoes & fruit	[pounds]	0.0	0	$0.00	0	0				
Bread and bakery products	[pounds]	0.0	0	$0.00	0	0				
Flour, rice, noodles, cereal products (exc maize)	[pounds]	0.0	0	$0.00	0	0				
Maize	[pounds]	0.0	0	$0.00	0	0				
Beans and other dried pulses	[pounds]	0.0	0	$0.00	0	0				
Milk, cream, yogurt, sour cream	[quarts]	0.0	0	$0.00	0	0	0			
Ice cream, other frozen dairy	[quarts]	0.0	0	$0.00	0	0	0			
Cheese, butter	[pounds]	0.0	0	$0.00	0	0	0			
Eggs [assumed to be 50 g each]	[number]	0	0	$0.00	0	0				
Meat										
Pork	[pounds]	0.0	0	$0.00	0	0				
Chicken, turkey	[pounds]	0.0	0	$0.00	0	0				
Beef	[pounds]	0.0	0	$0.00	0	0	0			
Fish	[pounds]	0.0	0	$0.00	0					0
Sugar	[pounds]	0.0	0	$0.00	0	0				
Vegetable oil (seed or olive oil)	[quarts]	0.0	0	$0.00	0	0				
Margarine	[pounds]	0.0	0	$0.00	0	0				
Coffee & tea	[pounds]	0.0	0	$0.00	0	0				
Juice & wine	[quarts]	0.0	0	$0.00	0	0				
Beer	[quarts]	0.0	0	$0.00	0	0				
Cigarettes, other tobacco products	[pounds]	0.0	0	$0.00	0	0			0	
SUB-TOTAL-1				**$0.00**	**0**	**0**	**0**	**0**	**0**	**0**
2.-HOUSING										
Residence										

House or apartment	[sqr ft]	0	0	$0.00	0			0		
current age of residence	[years]	0								
Yard [or total lot size incl. building]	[sqr ft]	0	0	$0.00					0	
Energy										
Electricity (also check composition--see note)	[kWh]	0	0	$0.00						
Enter as fraction (eg 25% = 0.25)										
fossil fuels		16%			0					
nuclear energy		54%			0					
large hydroelectric		22%							0	
small or micro hydroelectric		0%					0			
PV solar (on newly built-up area)		0.00%							0	
PV solar (on existing roof area)		0%								
Wind		8.0%							0	
Geothermal		0.0%								
Wood		0%								
Waste		0.0%								
Natural gas, city	[therms]	0.0	0	$0.00	0					
Liquid petroleum gas (propane)	[gallons]	0.0	0	$0.00	0					
Firewood	[pounds]	0.0	0	$0.00				0		
Fuel oil, kerosene	[gallons]	0.0	0	$0.00	0					
Coal	[pounds]	0.0	0	$0.00	0					
Water (not included since it depends on local circumstances)	[gallons]	0	0	$0.00				0		
SUB-TOTAL-2				**$0.00**	**0**	**0**	**0**	**0**	**0**	**0**
3.- TRANSPORTATION					**(results in uncalibrated global m2)**					
Bus, transit (around town)	[pers*miles]	0	0	$0.00	0				0.0	
Bus, intercity (Greyhound)	[pers*miles]	0	0	$0.00	0				0.0	
Train, transit (commuter, light rail)	[pers*miles]	0	0	$0.00	0				0	
Train, intercity (Amtrak)	[pers*miles]	0	0	$0.00	0				0	
Car (your own)	[miles]	0	0	$0.00	0				0	
average fuel efficiency	[mpg]	0								
Taxi / rental/ other's car	[miles]	0	0	$0.00	0				0	

average fuel efficiency	[mpg]	0								
Motorcycle	[miles]	0	0	$0.00	0				0	
average fuel efficiency	[mpg]	0								
Airplane	[pers*hours]	0.0	0.0	$0.00	0					
(e)conomy, (b)usiness or (f)irst class?		e								
SUB-TOTAL-3				**$0.00**	**0**	**0**	**0**	**0**	**0**	**0**
4.-ACTIVITIES										
Entertainment	[$]	0	0	$0.00	0				0	
SUB-TOTAL-5				**$0.00**	**0**	**0**	**0**	**0**	**0**	**0**
5.- WASTE										
Household waste:									Enter percentage recycled in your household:	
paper and paperboard	[pounds]	0	0	$0.00	0	42%		0	0	
aluminum	[pounds]	0	0	$0.00	0	28%			0	
other metal	[pounds]	0	0	$0.00	0	35%			0	
glass	[pounds]	0	0	$0.00	0	26%			0	
plastic	[pounds]	0	0	$0.00	0	5%			0	
SUB-TOTAL-6		**0.0**	**0**	**$0.00**	**0**	**0**	**0**	**0**	**0**	**0**

Ecological Footprint Assessment: The Results								
Your footprint is	***0.0***	***global acres.***						

The Ecological Footprint per person (calibrated to include indirect commercial and public expenditures)								
		FOSSIL	**CROPLAND**	**PASTURE**	**FOREST**	**BUILT-UP**	**FISHERIES**	**TOTAL**
		ENERGY				**LAND**		
CATEGORIES		**[gm2]**	**[gm2]**	**[gm2]**	**[gm2]**	**[gm2]**	**[gm2]**	**[gm2]**
FOOD		0	0	0	0	0	0	**0**
HOUSING		0	0	0	0	0	0	**0**
TRANSPORTATION		0	0	0	0	0	0	**0**
ACTIVITIES		0	0	0	0	0	0	**0**
WASTE		0	0	0	0	0	0	**0**
TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**

Ecological Footprint distribution								
		FOSSIL	**CROPLAND**	**PASTURE**	**FOREST**	**BUILT-UP**	**FISHERIES**	**TOTAL**
CATEGORIES		**ENERGY**				**LAND**		
FOOD		0%	0%	0%	0%	0%	0%	**0%**
HOUSING		0%	0%	0%	0%	0%	0%	**0%**
TRANSPORTATION		0%	0%	0%	0%	0%	0%	**0%**
ACTIVITIES		0%	0%	0%	0%	0%	0%	**0%**
WASTE		0%	0%	0%	0%	0%	0%	**0%**
TOTAL		**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Footprint Intensity	Cropland	Pasture	notes
	[global m2/kg]	[global m2/kg]	
Veggies, potatoes & fruit	1.6		weighted avg: starchy roots, vegetables, fruits
Bread and bakery products	8.3		same as "flour, rice, noodles…"
Flour, rice, noodles, cereal products (exc maize)	8.3		weighted avg. cereals (exc maize)
Maize	5.0		
Beans and other dried pulses	24.0		weighted avg. pulses
Milk, cream, yogurt, sour cream	2.3	1.2	milk
Ice cream, other frozen dairy	11.6	6.2	milk*5
Cheese, butter	23.2	12.4	milk*10
Eggs	20.8		eggs
Meat			
Pork	27.9		pigmeat
Chicken, turkey	19.0		poultry meat
Beef	54.7	32.3	beef
Mutton, goat	46.9	31.1	mutton & goat
Fish	121.9		weighted avg. fish, seafood
Sugar	3.4		
Vegetable oil	61.8		weighted avg. vegetables oils
Margarine	61.8		based on vegetable oil
Coffee & tea	40.1		weighted avg. coffee and tea
Juice & wine	3.8		wine
Beer	2.0		beer
Cotton	39.3		cotton lint
Wool			
Cigarettes, other tobacco products	13.6		tobacco
	Forest		
	[global m2/m3 roundwood]		
Timber	6,469		

Constants and Conversion Factors			
absorption rate [t C/ha/yr]:		0.95	
% absorbed by oceans:		31%	
Carbon intensity [t C/GJ]:			
coal		0.026	
oil (avg. fossil fuel)		0.020	
natural gas		0.015	
Carbon absorption factor [m^2/MJ]:			
coal		0.19	
oil (avg. fossil fuel)		0.15	
natural gas		0.11	
Pre-purchase food loss		1.1	
Structural consumption		1.1	
Total built area of goods and waste (m2/cap)		244	
Total built area of services (m2/cap)		244	

Weight conversion (kg/lb)		0.454	
Area conversion (acres/ha)		2.47	
Area conversion (m^2/ft^2)		0.093	
Volume conversion (l/qt)		0.946	

Equivalence and Yield Factors & Footprint [m2]	**Equivalence Factors**	**Yield Factors**	**Unadjusted Footprint**
	[gm2/m2]	[-]	[m2]
FOSSIL ENERGY	1.3		0
CROPLAND	2.2		0
PASTURE	0.5	1.3	0
FOREST	1.3		0
BUILT-UP LAND	2.2	1.4	0
FISHERIES	0.4		0
TOTAL	-	-	0

Correction Factors for the US		**FOSSIL ENERGY**	**CROPLAND**	**PASTURE**	**FOREST**	**BUILT-UP LAND**	**FISHERIES**
FOOD		1.03	1.35	1.75			2.88
HOUSING		0.98			1.60	0.78	
TRANSPORTATION		0.73				1.19	
GOODS		4.73	4.30	2.16	2.91	0.33	
SERVICES		4.21			3.52	0.33	
WASTE		4.73			2.91	0.33	
U.S. average fossil fuel area of	goods:	1903	services:	1652	waste:	1283	