ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ESTIMATING THE ECONOMIC VALUE OF AN ECOTOURISM AREA: THE CASE OF BISHANGARI LODGE.

BY

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A thesis submitted to the School of Graduate Studies of Addis Ababa University in partial fulfillment of the requirement for the degree of Masters of Science in Economics
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ABSTRACT

Ecotourism is purposeful travel to natural areas to understand the culture and natural history of the environment; taking care not to alter the integrity of the ecosystem; producing economic opportunities that make the conservation of natural resources beneficial to local people. It is currently the fastest growing sector of the world's largest service industry, tourism.

The key problem driving the accelerating widespread destruction and degradation of the natural environment of the country is that the importance of environmental conservation and sustainable development to socio-economic development is undervalued by our society. To appeal for decision makers the importance of conservation empirical evidence is necessary.

By employing Individual Travel cost Method of Valuation to measure the recreational economic benefit using on-site survey data from Bishangari ecolodge in Eastern Shewa Zone, Oromya Region, this paper estimates a truncated count data demand model to estimate the users' value of access to this wilderness area.

The recreational benefit of the site was estimated to be Birr 3,943,500 *implying that the site authorities collected 25 % of this some.*

DEDICATION

DEDICATED TO W/O SHETAYE TAMERAT, ATO ABERA KEBEDE
AND W/O DEBRITU GETACHEW

1. CHAPTER ONE

1.1 Statement of the Problem

Due to its geographical location Ethiopia is endowed with beautiful landscapes and a unique plant and animal population. Ethiopia has some 1408 known species of amphibians, birds, mammals and reptiles according to figures from the World Conservation Monitoring Center (WMC, 2006). Of these, 7 % are endemic, meaning they exist in no other country, and 4.6 % are threatened. Ethiopia is home to at least 6603 species of vascular plants, of which 15.1 % are endemic. 4.9% of Ethiopia is protected under IUCN categories I-V. Ethiopia, one of the world's richest countries in biodiversity, has experienced one of the highest rates of deforestation among tropical countries in recent decades. Between 1990 and 2000, Ethiopia lost an average of 140,900 hectares of forest per year. This amounts to an average annual deforestation rate of 0.93%. Between 2000 and 2005, the rate of forest change increased by 10.4% to 1.03% per annum. In total, between 1990 and 2005, Ethiopia lost 14.0% of its forest cover, or around 2,114,000 hectares. Measuring the total rate of habitat conversion (defined as change in forest area plus change in woodland area minus net plantation expansion) for the 1990-2005 intervals, Ethiopia lost 3.6% of its forest and woodland habitat (IUCN, 2006).

Even though various reasons for mismanagement of resources could be indicated, the single most important factor that looms larger than others is the high population growth of the country. This high population growth has put an enormous pressure on the country's natural vegetation cover because of an increasing demand for agricultural land and demand for energy consumption.

As Lisa (1998) expresses, among various economic incentives to mitigate this problem and preserve at least the remaining wilderness areas as protected areas ecotourism presents developing countries with growing opportunities for enhancing resource conservation and the much needed economic growth. Ecotourism based on protected areas is a large and growing part of the economy of many countries. These areas are protected for the ecosystem services they provide. Brian (1996) defines the term ecosystem service as the many conditions and processes associated with natural ecosystem that confers some benefit to humanity. Examples include the generation and maintenance of fertile soils, preventation of soil erosion, detoxification and recycling of water products, regulation of the hydrological cycle and of the gaseous composition of the atmosphere, control of potential agricultural pests, pollination, and preservation of the earth's genetic library.

However, in order for a land to be left for a protected area, decision makers should be convinced of the economic returns from such decisions. Protected areas are under increasing pressure to offer economic justification for their existence particularly in developing countries where demand for land and natural resources is high. Moreover planners and administrators of protected areas believe that in order for these areas to be accorded their proper place in regional, national and international economies, their benefits and impacts must be clearly demonstrated. The sound design of policies that relate to national and provincial parks and reserves management is based on the nature of both the costs and benefits associated with maintaining a wilderness area.

Even though nature based tourism offers a mechanism to get substantial benefit from protected areas, the extent to which ecotourism offsets the cost of a protected area must be presented empirically (Matthew, 2001). Since access to

this type of recreational area is only subject to entry fees that clearly underestimate the maximum willingness to pay by most visitors, the true value of the wilderness area to the public is unknown and must be estimated using non-market valuation methods

So this paper attempts to answer the question how much are nature's services worth? This will address the question of the value of conserving ecosystems for the services they provide to humanity by taking Bishangari ecolodge as an example. Federal government, regional governments as well as businesses can benefit from the explicit quantification in monetary terms of the value of items that are still regarded as priceless.

1.2 Significance of the Study

The Loss of environmental resources is an economic problem. This is because important values are lost, some perhaps irreversibly, when these resources are degraded or lost. Each choice or option for the environmental resource – to leave it in its natural state, allow it to degrade or convert it to another use – has implications in terms of values gained and lost. The decision as to what use to pursue for a given environmental resource, and ultimately whether current rates of resource loss are 'excessive', can only be made if these gains and losses are properly analyzed and evaluated. This requires that all the values that are gained and lost under each resource use option be carefully considered (Edward, 1997). Therefore valuation of environmental goods, such as protected natural areas, allows us to obtain information that could be included in cost-benefit analysis as an aid for public sector decision-taking processes. This is because environmental goods and services, which are not priced in traditional economic markets, are typically excluded from decision-making processes that are based on monetary values.

To help save the country's biodiversity and geographical scenic landscape this paper will try to come up with a justification for the allocation of funds for ecosystem establishment, maintenance and restoration. This can be done by explicitly valuating ecosystem services. This economic justification is important where strong competition for public and private funding is needed for conservation management.

Similarly there is a near – universal - under investment in nature protection (Wells, 1997). Most protected area systems in the world are under-funded; many are starved of funds even if they are the central focus of a major tourism industry. Therefore, another major purpose behind this paper is to contribute to

the widespread application of economic valuation in relation to protected area tourism in order to help demonstrate the true economic value of such places.

Moreover by assessing economic values of conservation benefits this paper can be used at two levels, for general advocacy and management support. General advocacy is needed to raise the awareness among political decision-makers and policy makers of the fact that conservation creates a myriad of monetary and non-monetary benefits to a variety of stakeholders, the overall sum of which exceeds the opportunity costs of the area. Policy and management decisions at all levels draw on resource economic perspectives to quantify the benefits and costs of alternative options, such as various tourism development strategies and pricing policies.

Further this paper will attempt to give protected area managers the basic concepts of economic valuation, and a framework for starting to think about a valuation study. By defining the audience, determining the scope, and choosing the appropriate analytical technique, a protected area manager should be able to commission a practical and useful valuation study which will help to guide management and financial decisions. Valuation is a tool, which can help, protected area managers conserve and sustainably use biodiversity, and more equitably share the benefits derived from that use of biodiversity.

Finally, unless environmental economists would be able to develop sound economic arguments in defense of nature conservation and tourism as a land-use option, they would have difficulties fighting off the threat, and any other future threats that could be anticipated in the country. Often in the past, from an economic perspective, we found that it was difficult to argue that establishing a conservation area was a sound land-use decision. The area often faced other land use alternatives such as logging the area's forest, building a dam, or developing a mine, the kind of development projects for which the economic impacts are usually highly visible, often immediate, easily

quantified and very appealing. So this paper will try to come up with a means to justify the use of natural resources sustainably.

1.3 Objective of the study

General Objective

The goal of this paper is to assist planners and decision-makers in increasing the input from economic valuation in order to take the best possible road towards a sustainable future.

Specific Objective

- to estimate the economic value of Bishangari lodge.

CHAPTER 2

Literature Review

This chapter is concerned with the theoretical and empirical literature with particular emphasis on environmental benefit estimation for outdoor recreation. A Brief overview on the history, meaning, and what an ecotourism area constitute will be discussed. The theoretical part deals with putting theoretical framework for the different values of environmental resources and the TCM. The empirical part will show the empirical works done around the subject area. Further we see why environmental valuation is important and how it could be included in economic cost-benefit analysis.

2.1. The literature on ecotourism

United Nations tourism organization reports that world tourism broke all records in 2006. A total of 842 million international tourist arrivals were recorded last year, an increase of 4.5 percent, the Madrid-based World Tourism Organization said, citing preliminary data. Further tourism is the largest

economic sector in the world, generating US $381 billion in 1995, excluding the approximately US$ 57 billion spent on international transport (WTO, 2006).

But to continue this rate of growth perpetually the world tourism economy needs to cleave to sustainability. This requires a development without over exploiting natural resources and without destroying the basis of existence. The goal must be to make growth possible in the mid- and long term while energy consumption and environmental stress undergo an absolute decrease. This will take us to the idea of sustainable tourism. The World Tourism Organization (WTO), in which Ethiopia is a member, has defined sustainable tourism as follows:

"Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities 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".

The quest for sustainable tourism born the idea of eco-tourism. Since the end of the 70's, the discussion on "soft tourism" or "ecotourism" has been focusing attention on the detrimental effects of travel. The idea of this type of tourism particularly condemned the kind of tourism development, which was too narrowly focused on economic calculations. In its place, it demanded a regional balance between economic efficiency, optimum satisfaction of tourist needs and intactness of nature and environment as well as of the culture and social structure of the indigenous population (Julie, 2002).

Ecotourism is currently the fastest growing sector of the world's largest service industry, tourism. It has the potential to be a prosperous economic market as well as delivering ecologically sustainable development to any region that has a unique natural environment. It is not with out any reason that the UN has designated the year 2002 as the International Year of Ecotourism and Mountains. It is to give special attention to the sustainable uses of our natural resources, which are highly endangered and are found on the verge of total depletion.

The idea behind ecotourism is to preserve a nation's natural resources while profiting from them. But the word ecotourism is widely abused and used as a marketing tool to destroy the very environment it supposed to help conserve. Various organizations have defined ecotourism in different ways. Ceballos (1981) defined the term as: tourism that involves relatively undisturbed natural areas with the objective of admiring, studying and enjoying the scenery and its wild plants and animals, as well as any cultural features found there. More recently, the preferred definition of the Ecotourism Society is '...responsible travel to natural areas that conserves the environment and sustains the well-being of local people' (Wood, 1994). Even though there are several competing definitions of ecotourism, a commonly accepted explanation is it is "purposeful travel to natural areas to understand the culture and natural history of the environment; taking care not to alter the integrity of the ecosystem; producing economic opportunities that make the conservation of natural resources beneficial to local people." (Garen, 2000: 221). Under this definition, eco-travel could range from a day-trip to a wildlife preserve to a week camping in a rainforest (McLauren, 1998:97).

Almost any activity that involves some sort of interaction with the environment and involves travel beyond the immediate area of habitation of an individual can

thus be classed as ecotourism. Commercial tour operators, in their effort to broaden the market; have included wildlife safaris, snorkeling, diving, bush walking, trekking, adventure tourism and alternative tourism in the ambit of ecotourism (R.Dowling, 1995).

In general areas used for ecotourism should offer:

- Spectacular scenery,
- Large concentration of wild life,
- Outstanding forest (trees, orchids),
- Uniqueness and naturalness of the area,
- Reasonable access to the area and visibility,
- Adequate infrastructure and logistic (roads, trails, accommodation, catering etc), Sociological aspects (guidance, interpretation, security etc).

As Lizanoa (2001) describes it, in its ideal form ecotourism would:

- ❖ Provide valuable financing for parks and conservation efforts,
- ❖ Serve as economic justification for the preservation of nature parks and wildlife,
- ❖ Reduce exploitation of conservation areas by supplying local peoples with viable economic alternatives,
- ❖ Promote environmentalism and conservation, and
- ❖ Encourage private conservation efforts.

The economic benefit of ecotourism is far better than the alterative income from farming activities. For example, "Parc de Volcans" in Rwanda with a size of 150 km^2 receives more than 10,000 tourists/year who like to see the mountain gorillas, and the revenue from this park is the third largest source of foreign currency earnings to the country. In Amboseli National Park (Kenya) the income from ecotourism is 18-20 times higher than if the park was used for

agricultural purposes. However, if proper management and conservation practices are not in place much of the revenue goes abroad, to national or regional treasuries or to private operators that have been granted concessions, and sustainable development cannot be guaranteed (Atlabachew, 2003). This shows ecotourism can excel results from farming activities for those areas which have scenic beauty.

Costs Rica is a living example to what an ecotourism could make to low investment backward countries. While many Third World nations are focusing on rapid industrialization and urbanization, Costa Rica has turned to ecotourism as its key to economic development. Although a small country, Costa Rica has incredible biodiversity with scenic beaches, lush rain forest, impressive volcanoes, and exotic wildlife. The nation's tourist industry brings in about 1 million visitors annually and generates approximately $1 billion a year, making it Costa Rica's second largest source of income after silicon chip production (Dulude, 2000). In terms of bringing in foreign currency, tourism is second only to the electronic components sector led by INTEL, and it earns more foreign exchange than the nation's former staple exports, bananas and coffee, combined (Country Commercial Guide, 2001). This gives us an example for those countries which have a natural beauty like Costa Rica ecotourism must be considered as an alternative.

Table 2.1: Number of tourists and Revenue from tourism

	Number of visitors to Costa Rica	Tourism Revenue (Millions of dollars)
1998	943,000	884
1999	1,032,000	1,036
2000	1,100,000	1,138

Source: Ted Case Template

The management of ecotourism area is a very sensitive issue in the definition of ecotourism. Successful management can only be achieved when there is a reasonable cooperation with the local population. There is a common consensus that at least 20 – 30 % of the income generated from the area should be given to conservation activities and to the local communities. Furthermore, employment for the local population should be provided (attendants, drivers, field guides, guards, etc.) considering additional opportunities in the off-season. Experiences show, that no ecotourism activity can be successful with out participatory management and revenue sharing. Therefore, tourists, tour operators, national and regional authorities and local people must work closely in a coordinated manner, since conservation and tourism need a symbiotic relationship (Atlabachew, 2003).

2.2. The meaning and need for environmental valuation

In the literature the importance of environmental resource valuation has been given various reasons. Freeman asserts "estimates of the economic values of environmental and resource services can be a valuable part of the information base supporting resource and environmental management decisions" (Freeman 1992:P.1). This premise is substantiated by a number of current environmental and resource policy issues, all of which involves in one way or another questions of economic values and trade- offs.

What were once considered unquantifiable and perhaps relatively unimportant intangibles such as improved recreation and visual amenities are now recognized as significant source of value and are thought to be susceptible to economic measurement. And consequences that were once unrecognized or that were thought to lie outside the realm of economic analyses (say, loss of biodiversity and the preservation of endangered species and unique ecological systems) are often central issues in the analysis of policy choice today.

Natural resources such as forests and commercially exploitable fisheries and environmental attributes such as air quality are valuable assets in that they yield flows of services to people. Public policies and the action of individuals and firms can lead to changes in the flows of these services, thereby creating benefits and costs because of externalities and the common property and public good characteristics of at least some of these services. Market forces can not be relied on neither to guide them to there most highly value uses nor to reveal prices that reflect their social values. It is the failure of the market system to allocate and price resource and environmental services correctly that creates the need for economic measures of values to guide policy making.

The original and still the principal motivation for environmental valuation was to enable environmental impacts to be included in cost –benefit analysis. In the past few years there have emerged two further sources of demand for environmental valuations .The first is the perceived need to take account of environmental damage in measuring economic performance. Since the late 1998's economist's calculations of environmental damage are now admissible evidence in fixing the compensation to be paid by those the courts hold responsible for the damage (Perman, 1999).

Valuation is a straightforward activity in benefit-cost analysis. Benefit cost analysis was first developed to assess the net economic value of public works projects especially water resource developments that withdrew production factor inputs (land, labor, capital, and material) from the economy to produce tangible out puts (for example water, hydroelectric power, transportation). Many of the outputs had market counterparts so estimation of monetary values was relatively straightforward (Smith 1988: p.2).

The economic value of a resource-environmental system as an asset can be defined as the sum of the discounted present values of the flows of all of the services. All of the changes in resources flows, whether benefit, cost or damages, have an impact in the value of the resource-environmental system as an asset. Some of the service flow of resource environmental system are linked directly or indirectly to markets and hence are responsive to market forces. But many service flows are not properly regulated by markets because of externalities, their public good characteristics of non-excludability and non-depletability and other factors. Hence there is a potential role for public policy in the management of resource environmental systems and a need for information on the values of the service flows (Freeman 1992: p.5).

The basic strategy for environmental valuation is the 'commoditization' of the services that the natural environment provides. The services are used by households and firms, and are treated as arguments in utility and production functions.

Why then value environmental resources? The answer to this question is that although we know intuitively that such resources may be important, this may not be enough if we are to ensure their wise use. Many environmental resources are complex and multifunctional, and it is not obvious the myriad goods and services provided by this resource affect humane welfare. In some cases, it may be worthwhile to deplete or degrade environmental resources; in others, it may be necessary to 'hold on' to these resources. Economic valuation provides us with a tool to assist with the difficult decisions involved. A single wilderness area may face two alternative uses preserving the area in its natural state and undertake development options for the environmental resource. Preserving the area in its natural state involves direct costs of preservation for setting up a protected area, and in developing countries this may include paying guards and rangers to protect and maintain the area and rangers the cost of establishing a "buffer zone" for surrounding local communities. Development options are sacrificed if preservation is chosen, and this foregone development benefits are additional costs associated with the preservation options. such costs are easily identifiable as they often comprise marketable output and in come sacrificed (e.g. logging revenue , fisheries revenue or subsistence agricultural income in case or wilderness). It is not surprising therefore that governments and donors usually consider the total costs- the direct costs plus the fore gone development benefits_ of preservation when choosing to retain an environmental resource is its natural or a managed state.

But the same approach should be taken in evaluating the development option for the environmental resource. For example if the environmental resource is to be converted to some other use, not only should the direct cost of conversion be

included as part of the cost of this development option but so the forgone value that the converted resource can no longer provide. Those may include the loss of both important environmental functions and, in the case of complex resource systems such as wilderness areas, many important biological resources and amenity value as well. Unfortunately many of these values of the natural or managed environmental resource are not bought and sold on markets, and thus are generally ignored in private and public development decisions.

For example the market value of environmental resources converted to some commercial use may fail to reflect the lost environmental benefits. Development decisions are therefore often biased in favor of those uses of environmental resources, which do have marketed outputs. Thus, the failure to account more fully for the economic cost of conversion or degradation of environmental resources is a major factor behind the design of inappropriate development policies .The result is too much conversion and over-exploitation of environmental resources- particularly wilderness areas, it is necessary to assets more fully the net-economic benefits arising from different wilderness area use.

Valuation is only one element in the effort to improve management of environmental resources such as wilderness areas. At the same time, decision-makers must take account of many competing interests in deciding how best to use environmental resources. Economic valuation may help inform such management decisions, but only if decision-makers are aware of the overall objective and limitation of valuation.

However there is some dispute about the accuracy of the non-market valuation methods by which economists seek to measure EC. The environmental valuation methods require the environmental impacts are argument in well-behaved utility functions. Some, economists and others, argue and provide evidence to support the argument that is this assumption is not satisfied, in that people do not, in fact, relate

to the environment in this way. If this is true then non- market valuation methods cannot do what ECBA requires them to.

Another major difficulty facing valuation of a complex wilderness area is insufficient information on important ecological processes that under pin the various Values generated by the wilderness area. If this information is lacking-which is often the case for many non market environmental values that may be deemed important to value-then it is incumbent upon the analysts conducting the valuation to provide realistic assessment of their ability to value key environmental benefit

The main objective of valuation in assisting natural resource management decisions is generally to indicate the overall economic efficiency of the various competing uses of wilderness areas. That is, the underlying assumption is that natural resources should be allocated to those uses that yield an overall net gain to society, as measured through valuation in terms of the economic benefits of each use less its cost. Who actually gains and losses from a particular wilderness area use is not part of the efficiency criterion per se. This a wilderness area use showing a substantial net benefit would be deemed highly desirable in efficiency terms, even the principal beneficiaries may not necessarily be the ones who bear the burden of the cost arising from the use. If this is the case, then this particular natural resource use may be efficient but it may also have significant negative distributional consequences. It is therefore often important that many proposed natural resource investments or management policies are assessed not only in terms of their efficiency but also their distributional implications.

There may be other motivation for managing natural resources in particular ways, such as political considerations. Thus, an economic value represents just one input into decision- making, alongside important other considerations. The goal of this

text is to assist planners and decisions makers with increasing the input from economic valuation in decision-making.

2.2.1. Dimensions of values of the environment

There is no single standard categorization or uniform terminology regarding the economic value of environmental resources. Perman (1999) have presented classification of resource benefits from environmental improvement perspectives. According to this literature we can divide environmental benefits into four classes of benefit potentially accruing to individuals. These are use value, existence value, option value and quasi-option value

Use value: arises from the actual and/or planned use of the service by an individual, for recreation for example.

Existence value: arises from knowledge that the service exists and will continue to exist, independently of any actual or prospective use by the individual.

Option value: relates to willingness to pay to guarantee the availability of the service for future use by the individual.

Quasi –option: value relates to willingness to pay to avoid an irreversible commitment to avoid development now, given the expectation of future growth in knowledge relevant to the implication of development.

Perman (1999) again classifies the total value of an environmental resource into two categories namely use values and non use values .Two categories of use values are sometimes distinguished: direct and indirect use values .In these categories direct use value is essentially use value as defined above, while indirect use value refers to the life support service role of the natural environment which are 'indirectly used'

by individuals (and by firms). In the first categorization the value attached to life – support services is covered by existence value.

Freeman (1993) has classified the values of flows of environmental services in terms of their three different sets of features. First, according to the legal and administration responsibilities for controlling the pollution or damage that would occur on different environmental resources (e.g. air, water, fisheries, forests etc.).Second, in terms of their effects on humans either directly (e.g., on human health) or indirectly (e.g., through impacts on ecosystem and inanimate systems). Finally, environmental resource benefits are grouped according to their effects on the market system (e.g., in the form of changes in incomes to producers and impacts on consumers in the form of changes in the availability of and prices of marketed goods and services).

There fore in order to estimate the total value of a recreational site one must include both use value and non-use value. How ever this paper deals only with the use value of Bishangari recreation area, this could be taken as partial valuation of the resource in consideration.

2.2.2. Methods of valuation of an ecotourism area

We have an extensive list of environmental valuation techniques. Usually the characteristics of the methods can be used for classification of the valuation techniques. Mitchell and Carson (1989) have offered a classification of methods for estimating values that is based on two characteristics of the methods:

- Whether the data come from observation of people acting in real-world settings where people live with the consequences of their preferences or people responses to hypothetical questions of the form "what would you do if...?" or "would you willing to pay...".
- Whether the method yields monetary values directly or whether monetary values must be inferred through some indirect technique based on a model of individual behavior and choice.

On the basis of these two methodological characteristics, any method for estimating environmental and resource values can be traced in one of four possible Categories- Direct Observed, Indirect Observed, Indirect Hypothetical, and Direct Hypothetical. These are shown in table 2.2

Table 2.2: Methods for estimating Values

	OBSERVED BEHAVIOR	HYPOTHETICAL
Direct	Direct observed Competitive market price Simulated markets	Direct hypothetical Bidding games Willingness to-pay questions
Indirect	Indirect observed Travel cost Hedonic property values Avoidance expenditures Referendum Voting	Indirect hypothetical Contingent ranking Contingent action Contingent referendum

2.2.3. Observed Behavior

2.2.3.1. Direct Observed

These methods include the use of competitive market prices and the use of result from simulated markets setup specifically to learn about individual values. An example of a simulated market is an offer to purchase wildlife hunting permits from parks or reserves at stated prices. With direct observed methods, the observations are based on the actual choices made by people who are maximizing their utility, subject to relevant constraints, and who are free to choose the quantity of the good at a given price. The data reveal values directly in monetary units since the choices are made on the basis of prices (Freeman, 1993).

2.2.3.2. Indirect Observed

These methods are based on actual behavior relating utility maximization. One type of indirect method is based on observed choices in a referendum setting. If an individual is offered a fixed quantity of a good at a given price on a take-it or-leave-it or a yes-no basis (as in a referendum), observation of the choice reveals only whether the value of the offered good to the individual was greater or less than the offering price. A family of discrete choice and random utility models has been developed for the purpose of deriving exact value measures from these choices. In other instances the resource environmental service does not have an offering price, but its quantity does affect the choice people make about other things such as quantities of market goods. In these cases, the value of the resource environmental service must be inferred through the application of some models of the relationships between the environmental services and marketed goods and services the environmental service. Most such models are based on the assumption of substitute or complementary relationship between the environmental service and marketed goods and services. Example of these models include the hedonic property value and hedonic wage models, models of household spending on cleaning and on repair of materials damaged by air pollution and the travel cost demand model for visits to a recreation site.

Where environmental changes affect producers of market goods, values can also be observed indirectly through examination of changes in product and factor prices end in producer's quasi- rents. Indirect observed methods involve a kind of detective work, in which clues about the values individuals place on environmental service are pieced together form the evidence that people leave behind as they respond to prices and other economic signals (Freeman, 1993).

The principal difference between indirect observed and hypothetical methods is that the latter draw their date from people's responses to hypothetical questions rather than from observations of real-world choices. The models and techniques used to draw inferences about values from these data are often the same as those used in the indirect observed methods.

Also in the indirect hypothetical category is the contingent ranking approaches, in which individuals are given a set of cards, with each card depicting a different situation with respect to the level of the environmental service flow in question and other attributes of choice (number of visit to a site, congestion level, and admission fee, for example). People asked to place their cards in order of preference. Values for environmental services can be inferred form these rankings. Uses of this approach include a study of the value of visibility in national parks (Charles river Associates, 1981) and a study of water quality benefits in a ringer basin (Smith, 1986).

The fourth category, Direct Hypothetical methods, involves asking people directly about the values they place on environmental services by, in effect, creating hypothetical markets. For example, people could be asked what value they place on specified change in environmental services, or how much of an environmental service they would "purchase" at a given price.

The above detailed illustration lists the current menu of environmental valuation techniques. However the travel cost method and contingent valuation method are two of the most widely used techniques

2.2.4. Some Important Valuation Technique

2.2.4.1. Contingent Valuation

The contingent valuation method (CVM) is a direct method in that it involves asking a sample of the relevant population questions about there willingness to pay (WTP) or willingness to a accept (WTA). It is called contingent valuation because the valuation is contingent upon the hypothetical scenario put to respondents (Perman 1999:420). The lure of providing numerical results not otherwise available overcame economists to rely on evidence not backed by behavior, and hence accounts for the growth of CV. Certain classes of goods or services cannot be valued with behavioral methods under any circumstances. Existence value or non- use value is the willingness to pay for the preservation or improvement of natural resources, without any prospect or intention of direct or in-site use of the resource. Such values cannot be recovered with behavioral methods because by definition they do not motivate behavior and hence have no underling demand curve (Hanley, 1997).

As compared with indirect methods "it is seen by many economist as suffering from the problem that it asks hypothetical questions, whereas indirect methods exploit data on observed, actual behavior" (Perman, 1999). On the other hand, the CVM has two advantages over indirect methods. First, it can deal with both use and non-use values, whereas the indirect methods cover only the former, and involves weak-complementary assumptions. Second, in principle, and unlike the indirect methods, CVM answers to WTP or WTA questions go directly to the theoretically correct monetary measures of utility changes. While the CVM can be used for use and non-use values, its actual use has mainly become in regard to the latter.

2.2.4.2. The Travel Cost Method of Valuing the Environmental Resource

The travel cost method appears to have first been proposed in a letter from Hotelling to the US park service in 1947.Much early research was empirical applications of the Hotelling- Clawson model (Clawson, 1959). Perman (2003) states that TCM was based on the simple idea that it ought to be possible to infer the values placed by visitors on environmental amenity services from the cost that they incurred in order to experience the services. This is because the basic idea behind the indirect methods of environmental valuation is to infer the monetary value of a change in the level of the environmental service of interest from observed market data on some ordinary commodity. If, for example, we observed an increase in the demand for visiting a reserved are following an improvement in water and other environmental quality, we could try to use the observed increase in demand for the visits to put a value on the environmental quality change.

However, it can be seen now that the TCM is an application of the weak complementarity idea .The complementarity between visitation and the environmental amenity means that for a visitor in order to enjoy the amenity service he/she must travel to the park, the consumer is transported to the commodity for consumption to take place. So travel to the park and amenity service of a park are complements. This complementarity is weak it is the case for a zero travel (travel = 0), utility is not affected by the variations in the level of the amenity service. In our case, travel to ecolodge and environmental quality of the ecotourism area are weak complements. For an individual if it is the case that given the individual does not travel to the ecolodge site, perhaps because the cost of accommodation is above his or her choke price then he or she does not care about variation in water quality in the lake.

In practical terms TCM takes two basic assumptions the first basic assumption for the TCM is that visits to the park are determined by a trip or visit generating function the second basic assumption is that the cost of a visit comprises both travel cost T_i ,varying with i, and admission price, P ,constant across I, and that visitors threat travel costs and the price of admission as equivalent elements of the total cost of a visit. Visitors respond, that is, in exactly the same way to increase/decrease in travel cost admission price, with $\vartheta V_i/\vartheta C_i < 0$.

In general travel cost is a method of measuring the use value of an environmental amenity by using the costs that individuals pay to travel to the site as a proxy for the price of the amenity. With this information, an estimated demand curve for the environmental amenity can be constructed. When environmental amenities are primarily used for recreational purpose, it is possible to use the travel cost method to estimate the economic use value of those environmental amenities.

Three observations for the basis for the travel cost method. First, the cost of using a recreation site is not limited to the price of admission; the monetary and time costs of traveling to the site must also be included. Second, different costs of using a recreation site apply to people living different distances from the site. Finally, assuming that the value that people place on a site does not systematically vary with travel distance, it is possible to take travel cost as a proxy for price and derive a demand curve for the recreation site (lesser et al 1997:321).

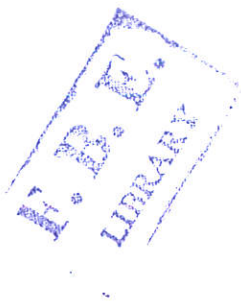
Travel cost method is a practically tested valuation method for outdoor recreation. Because of this it is chosen to value the use value of Bishangari recreation site.

2.3. ECOTOURISM IN ETHIOPIA

The ecotourism activity is a new phenomenon to Ethiopia. Even though it is a new phenomenon the number of operators is on the rise. Most of the operators are small and medium-sized enterprises. These enterprises find their places in a number of economic activities related to tourism and travel businesses. The followings are some of the areas where the Ministry of Culture and Tourism encourages local investors to participate:

Establishment of small eco tourism centers
Lodging (small hotel, pensions)
Catering (canteens, fast food services)
Organizing travel guide services
Manufacturing and sales of souvenirs
Transport (automobile, bicycle, boat, animal driven carts, animals)
Arranging cultural events
Sales of agricultural products (fruits, vegetables)
Sales of fish and poultry products
Animal husbandry

The Ethiopian Tourism Commission has incorporated the development and promotion of ecotourism in its second five-year development program. This is for the first time that ecotourism is included in its development programs. In the past years the Commission has rendered consultancy services for a number of potential developers of ecotourism sites. At present there are four investors who are seriously engaged in ecotourism site development in different regions of the country (Atlabachew, 2003).



Ecolodge Plc. has a plan of developing eleven ecotourism centers in different localities of the country. Bishangari, one of ecolodge plc's ecotourism area, has been engaged in ecotourism activities for the last six years. Another private company by the name Village Ethiopia Plc. is engaged in the development of three ecotourism lodges. Village Ethiopia's Bilen Lodge started its operation in 2000.The number of its total employee is 24.The employees except the manager, driver, and store keeper are local community members. It is located on Elalaytu, 300 km from Addis Ababa, 10km from the main asphalt. Its attractions are Scenery (interesting geological formations and volcanic activity), bird life, and good trekking itineraries-on foot, camel, or horse, Perennial Rivers, swamps and wetlands, wild life, prehistoric sites, thermal springs, and natural caves. Greenland tours run Evangadi lodge and campsite in Turmi and Wenney ecolodge at Lake Langano rite beside Bishangari lodge. Most the activities at Wenney are similar to Bishangari lodge.

Many countries around the world have already become beneficiaries of the ecotourism business. Ecotourism is a multifaceted activity with environmental, social, cultural and economic benefits. Besides, it is not capital intensive and can easily be developed and promoted in Ethiopia. Therefore the development of ecotourism in our country can have wide range of social, cultural, environmental and economic benefits if it is encouraged and well managed to flourish along side the Small and Medium Sized Tourism and Travel Enterprises (SMSTTEs).The benefit can be summarized as:

Socio-Cultural Benefits

Creates employment opportunities for local communities,
Ecotourism centers can be owned and managed by domestic investors. Hence, their role in creating local entrepreneurship is of paramount importance for a sustainable growth and development,
Artisan craft development or souvenir production and sales are one of the areas in tourism where ecotourism shall have a significant contribution in preserving and reviving the vanishing craft tradition of Ethiopia.

In ecotourism the importance of craft production, souvenir sales, folk-shows…etc. can also be manifested through the effective promotion of forgotten or little known cultures, Cultural and historical objects (such as icons, parchment and the likes) are cultural heritages, and often they have priceless values. The reproduction of such cultural objects can definitely reduce illegal export of original objects, which is rampant now days. Hence, the role of ecotourism is significant in reducing the illegal export of cultural heritages.

Environmental Benefits

The main products of ecotourism are environmental resources (scenery, flora, and fauna). Since the survival of the business and the improved way of life of the community depends on the preservation of the environment it will be natural that the coexistence of man and environment is exercised, and the host/guest relationship improved.

The environmental benefits of ecotourism can be summarized as follows;
Enhance the conservation of the natural resources, since ecotourism survives only in the protected and conserved areas,

Creates other sources of revenue for the local community in the protected areas and discourage the traditional activities such as agriculture, which is associated with deforestation, over grazing, poaching, etc.

Economic Benefits

Ecotourism presents developing countries with many economic opportunities. Tourism revenue for a country will be enhanced, employment opportunities to often previously disadvantaged population is available, small scale projects will get a boom. Besides these it is an important tool for transfer of income, and diversification in rural economies.

Its economic benefits are far greater than other alternative or parallel land use options. For example Bishangari ecotourism offers well-built lodges (made up of mud, wood and grass with typical local design) for accommodation with all-inclusive price ranging from US$32- US$173. The main produce of this ecolodge is the rich flora and fauna of the area, which is a paradise for nature lovers. Its products and quality services are the main factors determining the amount of revenue. In the other side of the same lake there are other hotels which are easily accessible and expensively built (with bricks and cement in a conventional style) but with much lesser room rate (ranging from US$20 – US$40).

In general the major economic benefits of ecotourism in Ethiopia can be summarized as follows:

The advantage of low investment cost and high return minimizes investment risks and attracts investors, and the effect of which, stimulates the economy in a sustainable manner.

Foreign direct investments have their own benefit but their high level of foreign currency leakages characterizes them as materials are imported or profits and salaries of foreign managers repatriated. In the cases of ecotourism and other SMSTTEs the foreign currency leakage is minimal or is in existent.

High multiplier effect. Ecotourism offers excellent opportunities for earnings to recirculation within the national economy, and the recirculation of earnings stimulates the national economy. This is because most inputs and resources are purchased locally, most earnings are spent locally or go into savings in the local banks and other financial institutions, profits and salaries are not repatriated and most importantly profits are reinvested

Like most Least Developed Countries Ethiopia is dependant on one or two export products, mainly based on agricultural products, and its economy is highly affected when the demand for such products are low. The development and promotion of SMSTTEs is therefore, as an export diversification skim. The fall of the world coffee price in various periods and its impact on the Ethiopian economy can be taken as a good example in this regard.

Another advantage of ecotourism is that it is not seriously affected by economic recession while large-sized enterprises are highly affected and take more time to recover.

2.4. Empirical Literature Review

2.4.1. Application of TCM in valuing outdoor Recreation Sites in Ethiopia

A few studies have looked into the valuation of different recreational sites in Ethiopia. Mahamud (1998) conducted a research to estimate the economic valuation of Sodere natural recreation area and demonstrated that the total amount that the site authorities are collecting through agate fees from visitors per year does not reflect the true, social recreational benefit of the site.

In his study, 232 sample visitors were used as his samples that represent visitors in different recreational activities such as main swimming pool, little swimming pool, common Bath and Abader bath in the site. Then, random selection was adapted to interview individual visitors at each stratum. The interviews included both objective questions and visitors' opinion.

In the TCM a linear demand curve was estimated .By integrating the demand equation between the natural log of minimum and maximum travel costs he estimated per person annual recreational benefit for the whole recreational experience. This estimate showed the area under the estimated demand curve between 0.69 and 5.04 travel costs as stated in the study.

In this study, visitors' total enjoyment into travel and on site experience was allocated by asking them how much value they attach to their travel and on -site experience. Then taking the mean value for the on -site experience to be 68.5 %, (as calculated from the sample), Per person annual recreational benefit for the on -site experience was estimated to be Birr 520. Considering the annual visits of 171,336 as obtained from the historical data and taking the mean value for

per Person annual visits of 9.069 in the example, he estimated the expected total on site recreational benefit to be Birr 9,824,094.80 per annum. But the site management collected from Birr 50,000 to 100,000 from gate fees each month to finance its expenses and salaries for employees of the site.

In his master's thesis, Terefe (2000) examined the economic value of Tis-Abay water falls using TCM. In his effort to measure the value of outdoor recreation for this site, 140 visitors were used as his sample groups by residence on the basis of distance from the site. In the interview, socio-economic demographic and attitudinal information were gathered from the respondents. Then, using this information on the percentage of sampled visitors from each of the zones, total visitors per year and the population in each zone, the visit rate per 1000 population in each zone was determined.

In his model, he took income, taste, availability of substitute sites quality and population in addition to travel cost to explain visitation rate /1000 population at zero admission fee. Then, using semi-log independent functional form and after dropping insignificant variables, TCM was estimated. The result indicated that the optimal gate fee is birr 40 and the maximum expected revenue for the site is Birr 85,812,000,where 21,378 is the number of total visits per year. The economic value of the park was estimated at Birr 2,181,998,095 per year based on the demand curve.

Sitotaw (2003) has applied the individual TCM to value economic benefit of Wabi-Shebele-Langano area using truncated Poisson method. The recreation benefit of the site was estimated to be birr 8,685,777.However the site

authorities collected 20.87 % of this sum, showing that the site is not used efficiently.

However ecotourism site has not been valued since their emergence in Ethiopia.

2.4.2 Applications of TCM in other Developing countries

Kateregga (1997) employed TCM to measure the value of Kaazin camping (recreation site) in Tanzania. In her effort to estimate the total benefits of the site, 200 adult visitors who came from five different zones were used as her samples. Children visitors were not included in the sample due to the reason that they may not come to the site by their own motivation. Interviews were carried out on Saturdays and Sundays alone because of very few visitors during weekdays. The date on average travel costs per zone and visit rate in relation to population densities in each zone were used to construct the demand curve for recreational service at the site .The total annual visit rates originating form each district were derived by multiplying the average frequency of visits from each district by the number of respondents from the zone. The area below the demand curve therefore estimated the total benefits of recreational services at the camp. Thus, using this demand equation the study reported different consumer surpluses that accrue to each marginal visit per100, 000 population from the five zones. These values of consumer surplus for the five zones were used to calculate a weighted average and the weighted average consumer surplus was 88889.5 shillings. The total consumer surplus was 17,777,900 shillings per year, which was computed as the weighted average consumer surplus 88889.5 multiplied by 2000, which is the average number of people who visited the site per year.

In this study, whether variables such as age, education, family size, gender and marital status would determine number of visitation was not considered. Furthermore, in estimation of travel costs, a linear functional form is used. However, since the dependent variable is both censored and truncated, OLS (Ordinary least squares) estimates of demand parameters will be biased (smith

and Desvouges, 1986). The maximum likelihood (ML) estimation should rather be used.

Using a sample of 600 visitors, Du yapping (1995) conducted a research using TCM to value improved water quality for recreation in East Lake, Wuhan, China. In the interviews, information about respondents' social and economic conditions such as income, education, age, sex, etc were gathered. To arrive at the demand equation using visitation rate as a dependent variable and travel cost as an independent variable specification tests has been done. The semi-log and the quadratic form of regression analyses were tested to find the best –fit functional form. The results showed that the functional form used was semi-log and travel cost was major determinant for the change in demand. The consumer surplus as measured from travel cost was about RMBY 42 million per annum.

Brown and Henry (1989) carried out a study using the TCM on the viewing value of elephants in Kenyan parks. In this study, a sample of 53 tourists was used to derive a linear demand curve to estimate the consumer surplus for the safari. The survey questions were designed to pick out the satisfaction that tourists obtain from a safari over a variety of activities in the safari park.

Brown and Henry estimated travel time costs as part of total travel cost by multiplying the hourly wage rate, round trip travel time and a 30 percent weighting.

Sharawi (2002) conducted a research using TCM to value the recreational service provided by Khartoum Sunt forest. In this study, data was collected through paying six visits to the forest during the weekends in the dry season as the forest is inaccessible during the rainy season. Random samples of 60 actual visitors of the site were interviewed about their characteristics, place of

residence, distance from the forest, mode and cost of transport, etc. using structured questionnaires. The distance cost was estimated for the different modes of travel. For those who used public transport (e.g. bus) to reach to the site, the value of round trip ticket was used while for those who used private cars; the running cost of travel in terms of fuel expenditure alone was computed for individuals.

The opportunity cost of time was estimated in two alternative ways to arrive at the best- fitted model. One way was giving it a zero value where only was used as a proxy for price. Alternatively, the mean wage/ hour for each occupation group was computed from the mean income and added to travel cost. However, the opportunity cost of time was set equal to zero for adding the mean wage/hour of time to travel cost did not yield satisfactory results.

The study found that the average number or visitors for the six-months of the year during which the forest had been accessible was 3619.5 visitors. The mean number of visits was 12.83/year. By applying log-log functional form, the results were obtained.

Accordingly, the estimation of individual consumer surplus was calculated using the formula N/-B where N is the average total number of visits/ individual and B is the coefficient of the travel cost estimated in the specified equations. The individual consumer surplus and the aggregate value were found to be USD 21.96/year and USD 79484.22/year respectively.

In this study, the opportunity cost of time was set equal to zero for it was assumed that adding it to travel cost did not yield satisfactory results. Mendes (2002) showed that taking opportunity cost of time spent on recreation is

appropriate to better explain the capture of demand recreation. Furthermore the sample size was very small which might have biased the results of the study.

2.4.3. Applications of TCM in developed countries

The use of TCM in developed countries is widespread. It is not possible to discuss exhaustively the literature even for group issues here. However it is important to know that the technique is applied to wide range of issues very extensively both in North America and Europe. Summaries of some applications are mentioned below.

An empirical example of a two-level, nested-choice model of sport fishing in south central Alaska illustrates discussion of the relative advantages of the different ways to specify endogenous on-site time. Berman and Kim (1999) on the paper Endogenous On-Site Time in the Recreation Demand Model has shown careful modeling of on-site time may substantially improve estimates of the benefits of recreational visits using the travel cost method, especially when on-site time is endogenous. This paper reviews the theory of endogenous on-site time, and shows how the theory may apply to the Random Utility Model (RUM).

Omitting substitute prices from a travel cost model is shown to cause a significant bias in consumer surplus estimates. Rosenthal (1987) has taken three sets of travel cost models representing 60,000-day users of U.S. Army Corps of Engineer reservoirs in Kansas and Missouri. The first set of models omitted substitute prices; the latter two sets included them. An analysis of variance test showed that consumer surplus estimates from the first set of models were significantly higher than the other two (F E 26.2 with 2, 20 degrees of freedom).In this paper the theoretical and practical implications of these findings are discussed thoroughly

Willis and Garrod (1991) on their paper investigate the use of micro data on individual travel-cost observations to value non-priced waterway recreation on a sample of sites throughout England. The use of on-site recreation user surveys to value open-access facilities raise questions about selection effects. The magnitude of specification error is revealed and a maximum-likelihood model corrects for bias.

Willis and Garrod (1991), on their article "An Individual Travel Cost Method of Evaluating Forest Recreation" present zonal consumer-surplus estimates for visitors to a number of forests and compares these estimates to those derived from individual visitor observations. Usually consumer surplus for outdoor recreation has traditionally been estimated by a Clawson-Knetsch travel-cost method. Both travel-cost procedures are used to assess the magnitude of recreational benefits and are found to produce widely different consumer-surplus estimates. This raises questions about research methodology and has implications for the value of recreation associated with forestry and its contributions to the rate of return on forest investment.

Peter (1998) has tested the use of TCM and CVM. This research compares non-market valuation techniques by applying a count data travel cost method (TCM) and dichotomous choice contingent valuation method (CVM) to a form of recreation for which it has not been previously applied: mountain biking. Due to mountain baking's increasing popularity these estimates of benefits may be useful in addressing conflicts. One of the most famous mountain biking sites in the U.S. (Moab, Utah) was chosen as the site for which to apply these two models. The benefits that were estimated for trips taken in the spring of 1996 are US$205 and US$235, for the TCM and CVM, respectively. These values are not statistically different using conventional significant levels.

Using onsite survey data from Gros Morne national park in Newfoundland Roberto et al., (2005) estimated and compare several truncated count data models of recreation demand. There model not only accounts for the truncated and over dispersed nature of the data but also for endogenous stratification due to the over sampling of avid users. The results are used to estimate the users' value of access to the park.

Chapter 3

Methodology

3.1. Empirical model

The Bishangari ecolodge recreation demand study was carried out based on information obtained from actual visitors of the site during the survey period. Since potential visitors are excluded from the sample, the dependent variable is truncated at zero, i.e. only number of visits greater than or equal to one is considered in this recreation demand model. Hence, ordinary least squares (OLS) might give biased estimator of the parameters. While recreation demand behavior is defined only for negative values, ordinary regression methods require that the dependent variables take on values over the full real line. Since the dependent variable (number of visits) is truncated at a certain point, maximum likelihood estimation is taken as an appropriate technique in selecting recreation demand model.

3.1.1. The Truncated Model

The truncated model for the recreation demand function is adopted from Greene (2000; 896-905) as follows:

$$V_{ij} = \beta X_i + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots 9$$

Assuming $V_{ij}/X_i \sim N(\mu, \delta^2)$ and $\mu == \beta X'_i$

Where V_{ij} = individual i's visit to site j /year

X_i = vector of explanatory variables for individual i

ß= parameters

ε_i= Error term

In this truncated model, we observe V_{ij} only if $V_{ij} \geq 1$. Using simple algebra, $ß'X_i + \varepsilon_i \geq 1$. Which again implies that $\varepsilon_i \geq 1 - ß'X_i$. Then $E(\varepsilon_i / \varepsilon_i > 1 - ß'X_i)$ is different from zero. This fact shows us that ε_i is correlated with X_i and using OLS estimates would lead us to inconsistent estimates of ß.

Now, taking the density function of V_{ij} (truncated variable) with probability density function of $f(V_{ij})$, mean $\mu = ß'X_i$ and standard deviation δ;

$$f(V_{ij} / V_{ij}) = \frac{f(V_{ij})}{\Pr ob(V_{ij}) \geq 1} = \frac{(1/\delta)\phi[(V_{ij} - \beta X_i)/\delta]}{1 - \Phi(\alpha_i)} \quad \ldots\ldots\ldots\ldots 10$$

Where:

$\Phi(.)$ = standard normal probability distribution function

$\phi(.)$ = standard normal cumulative distribution function

$\alpha_i = (1 - ßX_i)/\delta$

Accordingly:

$$E(V_{ij} / V_{ij} > 1) = \beta X_i + \frac{\delta\phi[(1 - \beta X_i)/\delta]}{1 - \Phi[(1 - \beta X_i)\delta]} \quad \ldots\ldots 11$$

$$Var(V_{ij} / V_{ij} \geq 1) = \delta^2[(1 - \delta(\alpha_i)] \quad \ldots\ldots\ldots\ldots 12$$

Clearly, the conditional mean and variance are non –linear functions. Thus, ML estimation is preferred to OLS due to the fact that in a truncated model, the

partial derivative of Equation (3) is equal to ß [1- $\delta(\alpha_i)$] which is different from ß .

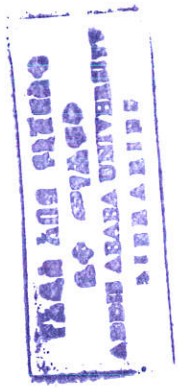
This paper utilizes a maximum likelihood (ML) estimation procedure for truncated samples to estimate the parameter of the demand equation. Limdep V.9 is used to obtain the parameter estimates and marginal effects of the ML estimator.

3.1.2. Functional forms

The trip generating equation doesn't have any specific functional form to it. This is because the assumption of weak complementarity doesn't imply any particular functional form.

But choice of functional form influences the results of travel cost studies, Ziemer et.al (1980). Although linear models are sometimes used in travel cost analysis, non-linear functional forms have provided better estimates to travel cost data in empirical studies, Daniel J. Stynes et.al (2001).

Exponential and power functions are popular because of their ability to explain the data, McConnell (1975). The simplest form of these two functional forms that are widely employed to empirically estimate a recreation demand using truncated models are the semi-log dependent and the double-log types. The terms "semi-log" and "double-log" derive from the transformation by which the corresponding exponential functions can be linearalized via logarithmic transformation.



Theoretically, they are equally important i.e. no one of these functional forms is theoretically better than others. However, various empirical studies has shown that the semi log form is preferred. In an admittedly restrictive test, Ziemer, Muster, and Hill (1980) compared linear, quadratic and semi log forms for recreational fishing and concluded that the semi log form was preferred.

3.1.3. Estimation technique

Primary data on individual visitors were obtained from a sample survey. Potential visitors are excluded from the sample. The dependent variable (visits per year) is truncated at the point where visits per year are greater than or equal to one. An alternative approach is to include the potential visitors and separate respondents' decision process into two parts:

1. Asking potential visitors' decisions whether or not to visit the site.

2. Asking those potential visitors who decided to visit the site how many visits per year they could make to the site.

Having this information, it is legitimate to use two stage estimation techniques such as Generalized tobit, Heckman and Cragg models to approximate the demand function. However, the dependent variable is a count (visits per year) and these models do not account for the count nature of the recreation trips variable (Mullahy, 1986).

In this study, the data for the dependent variable (visits per year) are typical of count data (integer). Truncated Poisson regression is, therefore, used to study such count data (Greene, 2000), because the data for the dependent variable are integers, truncated below one visit per year, equation estimation by OLS regression is inappropriate. Madalla (1983) showed that the regression slopes estimated by OLS would be biased toward zero when the dependent variable is truncated. The result is that the least squares method understates price elasticity and overstates consumers' surplus. The regression results obtained for this study are, therefore, estimated using maximum likelihood (ML) estimators.

Since Poisson and negative binomial regression functional forms are equivalent to a logarithmic transformation of the dependent variable, truncated Poisson or truncated negative binomial regression is appropriate for dependent variables with count data (integer). However, the significance of coefficients in a Poisson regression can be greatly overstated if the variance of the dependent variable is not equal to its mean, i.e., there could be over-dispersion problem with Poisson regression (Greene, 2000). An alternative approach suggested by Cameron and Trivedi (1990) in Greene (2000) is the negative binomial regression model.

The negative binomial regression model does not have this shortcoming. However, the negative binomial regression model is not used in this study after the tests for over dispersion (suggested by Cameron and Trivedi, 1990 in Greene, 2000) were conducted. These tests showed that over dispersion was not the problem of this data. Thus, Poisson regression model was adopted.

3.1.4 Variables and expected signs

Travel cost

The cost associated for visiting the site is considered a round trip from Addis Ababa. This is because all the visitors originate from Addis Ababa. This stems from the concept that the cost of using a recreation site is not limited to the price of admission; the monetary and time costs of traveling to the site must also be included.

In TCM, travel cost is considered an approximate price for number of visits undertaken. Thus the relationship between travel cost and number of visits in recreation demand analysis is an inverse one. A brief discussion on some measurement issues on travel cost is important.

Measurement issues

Number of visits (v) is considered as a dependent variable and travel cost (TC) and other socio-economic characteristics of visitors (x) are independent variables. In functional form:

$$V_i = f(TC_i, X_i)$$

Where I stand for individual i

The total cost of a visit to a recreation area has two components money cost of a visit (fuel cost, tire cost, etc) or distance cost and money equivalent of time cost.

Measurement of distance cost

In this survey to measure the distance cost questions were included. The result shows that there is no significant difference between visitors in this respect. All visitors use 4wd cars to arrive there, the time that has taken to reach there is similar to all visitors. So costs are imputed by considering the average distance that a car covers per liter of fuel and by considering the total round trip distance and the current price of fuel. The alternative is to take the answers by each respondent. But the relative high numbers of visitors have not give responses to this question. For this reason researcher assigned costs have been imputed based on the total time taken, the millage, current fuel costs, and

accommodations responses. For the conference tourists the costs are lower. This is because they travel in rented shared cars. In such cases overhead costs will be minimized across each individual visitor. These considerations are taken to calculate travel costs.

Measurement of time cost

Fundamental problems with the travel cost method have been the difficulty of capturing effectively the value placed on travel time by consumers of recreation services. Failure to explicitly incorporate this aspect of recreation site usage in to the TCM analysis results in the imputation of a demand curve, which is biased down ward from the true unknown position. Consequently, the benefits of the site are estimated conservatively.

Though several research has clearly shown the assumption of time value is an important determinate to value recreation sites, there is no single silver bullet developed to precisely estimate the opportunity cost of travel time. For example, Bockere (1965), Mc Connell and strand (1981) and Ward (1983) estimated opportunity cost of time by full wage rate in the measurement of different recreation sites using TCM. On the other hand, Button (1993) and others estimated opportunity cost of time to be one- third of visitors' hourly income, wage is used to estimate travel time because the individual is assumed trading off travel time for work time and there is no marginal utility or disutility

associated with work or with travel, then there is some basis for valuing travel time at the wage rate. However, Cesario (1976) have shown it seems farfetched to assume that the recreation trip maker is trading off time for travel with time for work. He proved that it is much more likely that the trade off is between time for travel and time for leisure activities, which we loosely define to be activities conducted during non work hours, whether they be in the form of rest, sleep, gardening, out door sport, etc. the value of travel time in a recreation trip making contexts thus reflects the value placed on alternative uses of leisure time by the individual, uses of leisure time by the individual for this is the relevant opportunity cost. This is a typical characteristic of Bishangari visitors. Most visit Bishangari at weekends.

The obvious problem of including travel time valuations explicitly in the benefits analysis is that like recreation consumption itself, time consumption has no market value. That is, whereas the variable cost of automobile travel may be reasonably estimated from market prices for gasoline, oil, tires, etc, the valuation placed on travel time is highly subjective, varying from individual to individual and from situation to situation.

In general various sources proved that including wage to estimate travel time has improved the estimates that is explicitly incorporating travel time valuations in recreation benefit analysis using wage seem superior to excluding them. But rather than using the wage rate in general, Cesario(1976) has shown on the basis of evidence collected to date the value of the time in respect to non work travel is between one-fourth and one-half of the wage rate. It is of course necessary to point out that this is an "average" valuation which may not apply strictly to any one individual since the value of time to an individual varies not only with the purpose of the trip, but may also vary with its length, time of day, and other factors. It is clear from these findings that the use of the marginal wage rate for the value of travel time values in recreation benefit estimation is in appropriate, both from the theoretical and practical points of view.

In this survey questions were asked to the respondents to impute some value for there travel time. Unfortunately most of the respondent even if educated, failed to give estimate for their travel time. Because of this one forth of the wage rate (the lower bound in the above finding) was used for valuating travel time.

3.1.4.1 Other exogenous variables

These variables refer to all socio-economic characteristics that are supposed to influence the demand for recreation site. Those factors that are expected to have effects on number of visits include visitors' income levels, educational levels, age, number of days at Bishangari, citizenship, gender, marital status, and visitation in group or alone and existence of substitute sites.

Visitor's income level refers to his/her individual monthly income. Since income reveals the ability to pay for frequent visits to a recreation site, number of trips to Bishangari ecolodge recreation site and the site visitors' income are expected to have a positive relationship.

More years of education would generally be expected to lead to a better understanding of the importance and benefits of visitation of a natural recreation site. Accordingly visitors' educational level (measured by years of education) is expected to have a positive relationship with the number of visits.

Visitor's sex is incorporated as a dummy variable. The relationship between gender and number of visits cannot be determined a priori. However, a value of 1 for male and 0 for female are assigned in this study to scrutinize whether gender is a significant determinant of number of visits to Bishangari recreation site or not.

Visitor's marital status is also expected to influence the number of visits. New marriage might increase frequency of visits to a recreation site. However, as people get married they are more likely to be engaged in social activities and they are less likely to make visits to recreation sites. Hence, the relationship between visitor's marital status and number of visits is also indeterminate a priori. This explanatory

variable is incorporated in this study as a dummy variable where a value of 1 is assigned for married and 0 for single.

Recreational visits in-group or alone is also included in this study as a dummy variable, where 1 is assigned for group visits and 0 for lonely visitors. However, the relationship between this variable and the number of visits to the site is indeterminate a priori.

Substitute sites of Bishangari recreation site are included in the study to examine whether they affect the number of visits to Bishangari recreation site. These substitute sites are included in the study as dummy variables, where a value of 1 is assigned if there are visits to each substitute site, which are Weynee substitute site and Bekele Mola substitute site and 0 if there is no visit to each site. This is done to test if they have an influence on recreation demands for Bishangari recreation site. Weynee and Wabe Shebele Langano recreation sites are expected to be close substitutes of Bishangari partly because since they have very close features and they are close to each other as the distance between them is 17km for Bekele Mola and Weynee is adjacent to Bishangari .The relationship between this binary substitute sites and visitation to Bishangari is expected to be an inverse one this is because those visitors who come up with a next best alternative to Bishangari are expected to visit Bishangari ecolodge less frequently.

Visitor citizenship has been taken in the model as a dummy variable. A value of 0 is assigned for foreigners and 1 for Ethiopian citizens. The relationship between this variable and the number of visits to the site is indeterminate a priori.

The length of the visit in days has been included as explanatory variable. The relationship between length of stay at Bishangari and frequency of visit may depend upon the relative location of the visitors, People living far away make fewer trip but

longer stay. But since all the visitors come to Bishangari from a single origin, Addis Ababa one can't say for sure what the direction of the relationship of the two variables is.

3.2. Survey Design

3.2.1 Description and identification of the site

An analysis of the value of a resource or of the benefit of an environmental or resource policy change must begin with a description of the resource flow or some measure of environmental quality (Freeman, 1992).

Bishangari ecotourism area is in East Shewa Zone Oromya region. It is situated 200km from the capital Addis Ababa. Its exact location is we travel 184kms to the road to Awassa until the turning point of the road to Assela, then we turn left and drive for 7kms (on the red rough road), then we turn left again (after the third bridge) then drive for 5kms and cross the container bridge. After crossing the container we will have a 4.5kms up to Bishangari lodge site.

Its altitude is 1582m above sea level. The area is found in the Great Eastern Africa Rift valley, which extends to Mozambique. Two big natural features define the output of Bishangari ecolodge area. It is found between the Rift valley lake of Langano and the Shashemene-Munnessa forest reserve area.

It is one in the chain of Ethiopia's beautiful rift valley lakes. Its length, width and area are 18km, 16km, and 230km^2 respectively. It is the second shallowest lake, next to Lake Shalla, in the rift valley, deepening down 46ms.Its altitude is 1585m above sea level. Although Langano is situated in the natural beauty of the Rift Valley, the lake itself is brown and brackish. This is related to why people go there; the salty water from the poor drainage of the lake is inhospitable to fresh water snails, which cause bilharzias. This disease infests most of the lakes of Ethiopia; keeping the cautious swimmers away. The dissolved minerals, which give it the brownish hue, are quite benign. A large and healthy fish population is maintained there, as attested

by the nets of local fishermen and the enthusiastic foreign anglers. The hotter temperature of the lake makes it ideal for swimming for day and night.

Moreover the most popular weekend get away spot for foreigners' living in Addis is Lake Langano. People flock to Langano more for the charm of the lake. There are several 'resorts' and plenty of cottages, mostly run for different Embassies to help their staff escape from the urban tensions of Addis. The popularity of the lake is not wholly unfounded. Once the visitor gets into the water it is quite nice and refreshing. Sunset view, fishing, Hippo spotting, swimming and boat ride are the services provided by the lake.

The other key attraction is Bishangari area Munnessa –Shashemene forest reserve. The forest reserve combines five ecological zones, wetlands, beach and lake, the forest, the dry pumice rocks and the interspersed Acacia trees. It is located in the Rift Valley. It hosts over 300 bird species, a diverse range of wildlife, spectacular array of plant life and un-spoilt biodiversity. The area is typically characterized by open Acacia woodland and bush. Wenney, Oromifa name for Colobus monkey, is found everywhere in large numbers in this vast acacia forest of the Great Rift Valley. This nature sanctuary is also a shelter for a variety of wildlife. The area offers the visitor the opportunity to explore the un spoilt beauty of remote pristine forests, dry acacia plains and dramatic volcanic landscapes. Mountain biking, horse back riding, guided treks into the forest, bird watching, and canoeing are some activities provided by the forest area.

On top of this the area is the country's prime road and venue for nature tourism. It is situated right at gate doors of the big game reserves, Omo, Mago and Nechisar National parks. This could be taken as attribute to the lodge.

The lodge has been designed on sound environmental principles utilizing solar power and biogas for energy. It has been constructed using natural materials and traditional techniques, without compromising on the quality and luxury of the accommodation.

The communities living around the area are Oromos.The ecolodge has assimilated itself with the local population. Unlike other ecotourism sites in the country, Men, women and young members of the society are involved in every activity of the lodge. The resident population is included in the development process of the forest area.

Locals are employed in jobs, which are far better paying than farming. It seems a community based ecotourism project than a privately owned plc. This typical feature is incomplete agreement with the ethics of ecotourism, which is keeping people and nature in perfect harmony. It has a virtue a typical ecotourists want to have.

3.2.2. Data Set

This study aims at measuring the economic value of Bishangari ecolodge. It employed TCM to estimate the consumer surplus of recreational trips. The consumer surplus for outdoor recreation has traditionally been estimated by a Clawson-Knetscha travel cost method. So here the travel cost method is used to assess the magnitude of recreational benefits.

To measure the value of this ecotourism area a structured questionnaire was designed and administered to a sample of visitors at Bishangari ecolodge. Then using the information from the survey the demand function was estimated. From the demand function we found the total recreation benefit of the area.

In the following section of this chapter, the recreation demand survey design, the different travel cost demand variables, and expected signs and recreation demand models are discussed.

3.2.3. Data Collection procedures instrument and methods

Due to high number of zero observed quantity demanded response of recreational survey our universe of study was confined to users of Bishangari ecolodge. The chosen method of data collection was on site data collection method. Data has been collected from a random sample of participants from the lodge. Thus visitors of the Bishangari lodge were contacted at the site over the period from September 20, 2006 through June 5, 2007.

The structured questionnaire was designed to collect data from individuals. Using this questionnaire individuals have been asked about the distance they traveled, the expenses they spend traveling, the length of their trip, how much time they spent at the site, other sites they visited on the same trip, the quality of they recreational experience at the site, their perception of the sites environmental quality, possible substitute sites, and demographic questions were asked.

3.2.4. Sample design

Primary data on sample individual visitors were obtained from on site interview. Having a representative sample size is a crucial substance to obtain a proper and reliable estimation of the total economic value of the lodge. When we determine the sample size cost of sampling, variability of the population, priori information, and the level of precision are some of the important factors that are considered. The relevant population, visitors to bishangari, is relatively small in number, this will entail us to use bigger sample size for an accurate sample but practical limitation (cost and high non response rate) has determined the sample size to be 11 %. All visitors to the site came from one and the same origin, Addis Ababa, and each visitor had been selected randomly.

Historical data on visitors' statistics has been used to determine how many interviews to conduct each month of the season. Then, proportionally visitors would be interviewed each month. However, a random sample of visitors during the peak seasons when there is a large number of visitors has been taken, as it can be considered as representative of the total visits undertaken in a year. October, March, and April months are the peak seasons hosting 271,215,and 190 visitors respectively. The strategy was to group the sample of visitors proportionally by weekday and weekend and sample from each sub-group. But the proportion of visitors visiting the area during the weekdays is relatively very low. Visitors record shows that more than 95 % of the visitors come On weekends. Those who came here at weekdays are stopovers that are on multi destination tour, from or to Mago and Nechisar national parks. This observation depicts the tourists are time constrained. Due to this the survey has been conducted during weekend.

Moreover a stratum has been created from which samples are taken based on the historical data. The sample size from each group is determined by proportional probability sampling (pps). The various segments of visitors are stopovers, conference tourists, and resident expatriates tourists and business men/women, comprising 5%, 23%, and 72% of the total population of visitors respectively. So samples were taken in this proportion.

Table 3.1 BISHANGARI LODGE PVT.LTD.CO.

Total Number of Guests (Actual)

1st July 2005-30th June2006

Number of Guests	Jul -05Jun 06 Total Number of Guests	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb
Double Rooms									
Individuals	598	18	60	46	108	54	36	46	
Conference	242	32	36	12	36	0	10	0	
Tour Operators	102	0	0	14	34	16	6	6	
Total Double Room Guest	942	50	96	72	178	70	52	52	
Single Rooms									
Individuals	420	25	8	30	78	43	14	46	
Conference	101	18	18	3	3	0	16	0	
Tour Operators	59	6	6	10	12	5	0	2	
Total Single Room Guests	580	49	32	43	93	48	30	48	
Total Number of Guests	1,522	99	128	115	271	118	82	100	

3.2.5. Field operation

Enumerators have been recruited, trained and deployed to the Bishangari site. Before launching the survey a pretest has been undertaken on sample visitors at Bishangari. Based on this the questions have been adjusted to make the interviewing process less time consuming and more attractive. Questions were omitted that does not meet the specific nature of visitors to the site, for example the demographic question asking: are you the head of the household? Found to be offensive for most female visitors. It was omitted for this reason.

Having adjusted the questionnaire after such a manner enumerators were deployed for the site. At ecotourism areas tourists do not come and go frequently, so patience was a virtue during the survey. Enumerators leave the survey due to the nature of the wilderness area and absence of human and basic facilities around the ecotourism area. It was important to train other enumerator to fill the gap. An ecotourist values his/her privacy most. That is why they are there. Due to this reason the refusal rate was very high. Due to security concerns and other reason they did not want to be approached.
These characteristics of the respondent have threatened the survey to the point of halt. A painstaking patience and diligence has bore the required fruit.

Chapter 4

EMPERICAL RESULTS

A survey has been conducted to collect information on the socio-economic characteristics of visitors. This section describes the important findings and results obtained from the sample survey. Moreover the regression results are presented in like manner.

4.1 Descriptive analysis

The original plan was to survey 300 results. But this was practically impossible. A total of 194 questionnaires have been used. Out of these 19 questionnaires were discarded for inconsistency and incompleteness.

4.1. DISTRIBUTIONS OF GENDER OF SAMPLE VISITORS

Gender	Frequency	Relative Frequency (%)
Female	91	52
Male	84	48
Total	175	100

Source: On site survey result

Totally out of a total of 175 visitors males are 84 and females are 91 comprising 48% and 52% percent respectively.54.3% of the visitors have reported to be married and 45.7% are singles (not married or divorced or separated).

4.2. DISTRIBUTIONS OF MARITAL STATUS OF SAMPLE VISITORS

Marital status	Frequency	Relative frequency (%)
Single	80	45.7
Married	95	54.3
Total	175	100

Source: On site survey result

The majority of visitors, 68%, are employed in foreign diplomatic missions or N.G.O. The second important component of the visitor's occupation is domestic Businessmen/women comprising 29.7% of the total visitors. Retired visitors made up 2.3 percent of the total sampled respondents. The retired are international tourists.

4.3. DISTRIBUTION OF OCCUPATION OF SAMPLE VISITORS

Occupation	Frequency	Relative frequency (%)
NGO,UN,AU,EC	119	68
Businessmen	52	29.7
Retired	4	2.3
Total	175	100

Source: On site survey result

Regarding the age of the visitors 94.3% visitors are above 35.This is in direct contrast with other recreation surveys in Ethiopia and it does not meet our priori expectation. For many reasons recreationist in various surveys conducted in Ethiopia are mostly below 30.Our finding shows the demand for nature tourism increases with age. This may mean older people are more educated and have the knowledge of wilderness area recreation benefits. Sitotaw (2003) has found that most of the visitors, an overwhelming 98.88% of the total 268 surveyed visitors of Wabe Shebele are less than 40.The mean age for the same survey is 28 year, where as in our survey the mean age is 47year.What makes the two surveys comparable is their proximity. They are found at either side of lake Langano. This clearly shows older visitors preferences to the services of nature.

4.4. DISTRIBUTION OF AGE OF SAMPLE VISITORS

Age group	Frequency	Relative frequency (%)
10-20	1	0.6
21-30	5	2.8
31-40	39	22.3
41-50	80	45.7
51-60	31	17.6
61-70	18	15.8
71-80	1	0.6
Total	175	100

Source: On site survey result

All of the visitors to Bishangari are 12 complete or above 47% of the respondents have reported to complete grade 12 and 53% have a university degree and higher qualification. This depicts the nature of the ecotourist, the educated are highly likely to visit wilderness area than the less educated. One can deduct from this that most of the target group for ecotourism are the educated. This is because as one become educated it is more likely that they have more understanding of nature and its complex ecological setting. This

awareness in turn creates the demand for nature tourism. The average year of the sample visitors is 47.

4.5. DISTRIBUTION OF SAMPLE VISITORS BY CITIZENSHIP STATUS

Citizenship	Frequency	Relative frequency (%)
Foreigner	112	64
Ethiopian	63	36
Total	175	100

Source: On site survey result

To understand the income statistics of the visitor we have to discuss about the composition of the tourists. According to the survey finding and visitor records 64% of visitors to Bishangari are expatriates. The rest 36% comprises Ethiopian N.G.O workers and businessmen. Obviously this group comprises one of the highest income earners. Accordingly the survey reveals that 83.4% of visitors income is above 21,000 Birr, 16.6%of the visitors income is above 31,000Birr.The minimum income is 13,000 Birr and the maximum income is 75,000 Birr. This is a clear reflection of what the visitors are like. One can say with high confidence the combined effect of income and being an expat is a strong on visit of wilderness in Ethiopia. The average income for sample visitors is estimated to be 27,514.

Even the Ethiopian visitor is the rich and the well to do. From this one can say that the effect of income on visitation to wilderness area is very strong and positive for both Ethiopian and foreigners. One disturbing fact from this income data is that even the middle income groups in Ethiopia are structurally singled out from visiting the site. This is a problem for ecotourism in general and Bishangari in particular. This is because the target group is very small for expansion. But one can not generalize that this is a general property of ecotourism market in Ethiopia. To deduct so a multi site valuation study is necessary.

4.6. DISTRIBUTION OF INCOME OF SAMPLE VISITORS

INCOME/Birr/Month	Frequency	Relative frequency (%)
10,000-20000	17	9.7
21,000-30,000	129	73.7
31,000-50,000	26	14.9
51,000-100,000	3	1.7
Total	175	100.0

Source: On site survey result

But this finding is not without explanation. First this could be the direct consequence of lack of awareness in the country. Lack of awareness for tourism in general and ecotourism in particular may have created a bottleneck to expand the potential market base.

The second reason could be the business practice of Bishangari ecolodge. The way firms business will have an impact over their profit, demand, and the mix of their clients. For example in developed countries companies who do business without considering their impact on the environment are more likely to get affected by their irresponsible actions. This will directly be reflected in their volume of sell, profit and future success. This is because the awareness of governments and the consumer is ever increasing. But in our case it seems this international trend seems to work in the opposite direction. Bishangari ecotourism site follows economically sound environmental principles and ecotourism ethics. Playing music loudly is forbidden (for not disturbing other guests and wildlife), night time campfire is forbidden (for protection of the forest) so on and so on. But most local tourists are looking for mainly a self satisfying vacation and local communities are seeking to obtain the maximum economic benefit from tourists. This two interests are in direct conflict. So the tourist will go to the same kind of ecotourism sites but that do not impose same

conservative environmental restriction. So those companies which are motivated by short-term profits will have the better part of the cake. This will force Bishangari to loss its market, reduce the number of local and International visitors.

The third possible reason for relatively low number of Ethiopian middle-income tourist may be the charge of the Godjos services.These ranges from $52-$173 per day. One can see that this price range is beyond the reach of most local citizens.

4.7. TRAVEL CHARACTERISTICS OF THE SAMPLE VISITORS

Characteristics	Frequency	Relative frequency (%)
Loner	27	15.4
Group	148	84.6
Total	175	100.0

Source: On site survey result

84% of the visitors come to Bishangari in Group. The average person in a group was 3.So this clearly shows group travel is a characteristics feature of visit to Bishangari.

Travelers' mode of transport is important determinant of travel cost. The Bishangari recreation site is accessible only with 4WD car. All visitors, save the conference tourist, have come to the site using their own car. The visitors who came to visit Bishangari have reported to use either company car or rented car.

4.8. RELATIONSHIP OF SAMPLE GROUP VISITORS (WITH IN A GROUP)

RELATIONSHIP	Frequency	Relative frequency (%)
Loner	27	15.4
Friends	52	29.7
Colleague	14	8.0
Family	47	26.9
Couple	35	20.0
Total	175	100.0

Source: On site survey result

Traveling with friends dominate among group travel to Bishangari. Family, couple, and colleagues comprise 47%, 35%, and 27% respectively. Loners make the minority 14% of the ecotourists. This result shows people favor travel to Bishangari in-group than alone.

4.9. DISTRIBUTION VISITORS BY PURPOSE OF THE TRIP

Trip purpose	Frequency	Relative frequency (%)
Recreation	161	92.0
Work & Retreat	14	8.0
Total	175	100.0

Source: On site survey result

92% of the visitors have reported they travel to Bishangari for recreation purpose. The remaining 8% travel for their company annual meeting and recreation. So recreation experience to bishangari dominates the purpose of the trip.

4.10. DISTRIBUTION OF SAMPLE VISITORS BY TYPE OF ACTIVITIES

Activities	Frequency	Relative frequency (%)
Fishing	18	10.3
Guided Trekking	134	76.6
Bird watching	15	8.6
Boat ride	8	4.6
Total	175	100.0

Source: On site survey result

Visitors were asked about the type of recreation activities they have engaged in at Bishangari. Guided trek into the forest is clearly the most admired recreation activity. Fishing, bird watching, and horse ride accounts for 18%, 15%, and 8% of the total visitors. An overwhelming 98% have reported to engage in swimming activity.

4.11. DISTRIBUTION OF SAMPLE VISITORS BY REASON OF VISIT

Reason	Frequency	Relative frequency (%)
Observe nature	123	70.4
The Lake	36	20.5
Quietude, Peace	16	9.1
Total	175	100.0

Source: On site survey result

The question that ask why the visitor go to the recreation area will depict whether the true nature of their visit is related to the environmental service and related activities the area provides or to something that is not related to the environment. This will in turn be a justification to impute the travel costs of a visitor as a proxy price to visit the area. To our relief all of the visitors have visited the area one way or the other for the environmental services the area providing. Accordingly 70.4% of the respondents are visiting the area for directly observing nature, 20.5% have visited the area because of the lake, and 9.1% have referred to the quietude/peace/seclusion element as their reason for visiting the area. Obviously the quietude/peace/seclusion element is one of the indirect outputs of the wilderness area.

4.12. DISTRIBUTION OF VISITORS BY NUMBER OF VISIT/YEAR

Visit/year	Frequency	Relative frequency (%)
1	99	56.57
2	44	25.14
3	11	6.28
4	9	5.14
5	12	6.87
Total	175	100.0

Source: On site survey result

Total numbers of annual visit to the wilderness area and travel cost are the two important variables that will be used to determine the value of the recreation area under consideration. Thus visitors were asked their number of visit to Bishangari in the last 12 months. The majority of visitors, 56.57% have reportedly visited the area only once and in contrast to this 6.87% of visitors have visited the area 5 times in the last 12 months.25.14% of the visitors have visited Bishangari twice.6.28% visited the area thrice, and 5.14% have reported to visit the site 4 times a year. The average number of annual visits to the site was estimated at 1.78 visits.

4.13. NUMBER OF DAYS AT BISHANGARI /CURRENT VISIT/

No of days	Frequency	Relative frequency (%)
0	1	0.6
1	69	39.4
2	53	30.3
3	39	22.3
4	4	2.3
5	9	5.1
Total	175	100.0

Source: On site survey result

It is assumed that the recreationists first determine the optimal length of time to recreate at the recreation site. Therefore their length-of-stay at Bishangari recreation site is asked. Different consumers have specified the length of days they are taking at Bishangari ecolodge. Their length of stay ranges from a day to five consecutive days stay.39.4% visitors have a day long stay at the site and 5.1% visitors have stayed five days. The percent of visitors who have said they will stay 2 days are 30.3%, those who have reported to stay 3 days are 22.3%, who have said 4 days amount to2.3%. The average number of stay to the site was estimated at 2.02 days.

4.14. VISITATION CHARACTERISTICS ON SUBSTITUTE SITES

	Frequency	Relative frequency (%)
Yes	39	22.28
No	36	20.57
Non response	100	57.14
Total	175	100.0

Source: On site survey result

By and large the existence of substitute goods will affect the demand for a recreation site in two ways. Keeping other things constant the existence of substitute sites will shift a demand curve to the left. But a positive change in the price of substitute goods would shift the curve to the right. So if the effects of a substitute attractions are neglected a negative bias will be exhibited. To avoid this, question were asked first whether there is an alternative site, and if there is an alternative site their frequency of visit to that site. But the non-response rate for this item is high, 57.14% of the visitors did not answer this question.22.28% of site of the respondents have responded to know and visit a substitute site for this recreation area. The rest 20.57% responded they do not consider any other site as a substitute to Bishangari. This is clearly a justification that a model to value Bishangari has to include substitute sites as independent variable to see the direction and magnitude of its effect.

Wenney lodge has clearly come out as a favorite site that most of the visitors to Bishangari visit. 16.57 of the total sampled visitors have responded to visit this site. Seeing that the to sites proximity (they are found side by side), it would not be amazing that visitors may choose to visit the two sites alternatively. A few number of the sample visitors, 5.7%, have reported to visit Bekele Mola.

4.15. VISITATION TO SUBSTITUTE SITE

	Frequency	Relative frequency (%)
No visit	36	20.57
Non response	100	57.14
Bekele Mola	10	5.7
Wenney	29	16.57
Total	175	72.0

Source: On site survey result

The average combined distance cost and time cost of Bishangari visitors was 1675 Birr. The combined cost of travel ranges from Birr 590 to Birr 2400.The gap is wide this is because the group travelers will share the cost so much so that it will be reduced as low as 590 Birr. The maximum cost is incurred for those high income single travelers. 84 % of the visitors cost lie for the income group between Birr 1500-2000. 8.47% of the visitors combined cost lie in the range between Birr 500-1000, and 7.42% lie in the range Birr 2000-2500. Time costs are measured by taking $1/4^{th}$ of the visitors hourly wage rate and multiplying this with the total round trip hours. This is the lower bound of time cost used in most TCM research.

However this combined cost did not give satisfactory results. Because of this time cost and distance cost have been included in the model independently as variables. The mean value of time cost is 173.38 and the mean value of distance cost is 1234.28.The minimum value for time cost and distance cost is 81 Birr and 190 Birr respectively. The maximum value is 468 birr for time cost and 1600 Birr for distance cost.

4.16. CUMULATIVE TOTAL COST OF SAMPLE VISITORS

CTC/Birr	Frequency	Relative frequency (%)
500-1000	15	8.57
1500-2000	147	84
2000-2500	13	7.42
Total	175	100.0

4.2 Regression results and Benefit Estimation

The travel cost and other socio-economic variables are taken as independent variables; visitation/individual/year is taken as the dependent variable. After estimating the regression parameters in such a manner we will have the estimated recreation demand equation.

But the type of data we are dealing with will affect the selection of the type of regression model and the functional relationship of the dependent and independent variables. Since the dependent variable, visitation is a count calculated on the basis of the number of visits to the site, it can only take values that are non-negative integers. Moreover since all observed visitors have taken at least the current trip, non-visitors are not observed, so the sample is also truncated at zero. Because of this truncated count data models are used to estimate the demand curve for trips using data from an on-site survey of visitors to Bishangari lodge. The exponential demand function is employed to estimate the benefit of the recreation area. The truncated Poisson model has been applied to estimate the demand function. This model is often used to model information on counts of various kinds. The model is:

$$LnV = \beta_0 + \beta_1 DISTCOST + \beta_2 DAYS + \beta_3 AGE + \beta_4 INCOME + \beta_5 EDUC + \beta_6 GENDER + \beta_7 MARITAL + \beta_8 GROUP + \beta_9 BM + \beta_{10} WEYNEE + \beta_{11} TIMECOST + \beta_{12} CITIZEN$$

Where:

V=Individual's number of visit/year

DISTCOST= Visitors round distance travel cost plus

TIMECOST= Visitors time travel cost

AGE=age of the visitor in full years

INCOME=Visitor's monthly income

EDUC=Visitor's educational status expressed in number of years

GENDER=Gender of the visitor as dummy variable (1=male, 0=Female)

MARITAL= Visitor's Marital status as dummy variable (1=married, 0 = single)

GROUP= travel characteristics as dummy variable (1=group, 0 = single)

BM= Bekele Molla substitute site as dummy variable (1=visit, 0=otherwise)

WEYNEE= Weynee lodge substitute site dummy variable (1=visit, 0=otherwise)

CITIZEN=Visitor's citizenship as dummy variable (1=Ethiopian, 0=otherwise)

DAYS= The number of days a visitor spent at Bishangari during this trip

β_0 = Constant term

The economic value of an outdoor recreation could be derived from a demand curve of the area. The demand is derived from a regression result between the annual visitation and the travel cost. For deriving the demand to reach at welfare measures we only use the travel cost and travel time cost. The area under the site demand curve represents the economic benefits that flow annually to visitors of the recreation site. The robust regression results of the truncated Poisson model are displayed in table 4.17 below.

4.17. Poisson Regression Maximum Likelihood Estimates (Dependent variable=No of Visit/Year)

Variables	Truncated Poisson Coefficients	Marginal effects	Mean values
DISTCOST	-0.000385* (-3.478)	-0.000684 (-2.929)	1232.451
TIMECOST	-0.000628 (-0.562)	-0.001117 (-0.486)	173.382
INCOME	0.000040* (5.527)	0.000064 (2.394)	27514.28
EDUC	0.000328* (5.451)	0.005843 (3.581)	14.474
AGE	0.001653 (0.526)	0.002943 (0.451)	47.205
GENDER	0.017976 (1.335)	0.032002 (0.288)	0.4800
MARITAL	0.046243 (0.834)	0.082321 (0.726)	0.54285
BM	0.0460530 (0.656)	0.0819838 (0.557)	0.217142
WEYNEE	0.515482* (2.680)	0.917662 (2.360)	0.920000
GROUP	0.165085*** (1.709)	0.293885 (1.500)	0.845714
DAYS	-0.0706036* (-2.308)	-0.125689 (-1.946)	2.017142
CITIZEN	-0.0791208 (-1.252)	-0.140851 (-1.081)	0.360000
β_0	-0.4635741 (-1.807)	-0.825256 (-1.409)	N/A

* 1 percent level of significance
** 5 percent level of significance
*** 10 percent level of significance
Numbers in parenthesis are t-values
N/A= Not applicable

The log-likelihood ratio (LR) can be used to test the significance of the model (Greene, 2000).

LR=-2(Restricted Log- Unrestricted Log L)

From the regression results we found that the unrestricted log is -222.3492 and the restricted log likelihood is -260.6948. Therefore, the LR is equal to -75.2682.

The table (critical) value of the test with 13 degrees of freedom(χ^2_{10}) ,at 1% significance level ,is 27.6883.Since the calculated value is greater than the tabled value ,we will reject the null hypothesis which says all independent variables are irrelevant at 1% significance level. Therefore the model is significant at 1% significance level. Not all count data is suitably modeled by a Poisson distribution. This is because if the mean and the variance of the dependent variables are not equal over dispersion occurs and the Poisson model does not account for this. Therefore tests for over dispersion using the negative binomial model has been undertaken. The results indicate that there is no over dispersion. The mean of visitation is 1.766 and its variance is 1.517, the test shows that these results can be considered as equal, implying the absence of over dispersion.

Robust regression results of the truncated Poisson model

From the regression results we see that both distances travel cost (DITSTCOST) and time cost presents the expected negative sign, which yields a negatively sloped demand curve for visit/person/year. This means that, keeping all other things constant the demand for visits to Bishangari lodge would decrease by 0.0007 units if visitor's travel cost increased by one unit. The effect of DISTCOST is highly significant on visit to Bishangari; the variable TIMECOST has insignificant influence on visitation. This is rather unusual finding, because most visitors to Bishangari visit the area in week ends, this shows that they are time constrained. Especially during week ends that follow holydays the turnout to the site is very high showing the highly time sensitive nature of the tourists. This discrepancy may arise not from the nature of the tourists but from the characteristic of the variable itself. The effect of the variable INCOME appears significant at the 1% level and has a positive sign .The sign of this variable meets our priori expectation and it is in line with most similar empirical findings. On the other hand, often in the literature income is found to be positive but non-significant in travel cost studies. But in our model it has shown to have a significant effect on the number of visitation an individual make. It is likely that the remote location, inaccessibility and the relatively higher accommodation cost of Bishangari makes the visit expensive enough for many visitors for visits to be a normal good. The variable EDUCAT presents positive and significant sign, which may suggest that as the number of years of education increased awareness to this kind of goods increase and thereby visitation may follow the same direction to educated visitors. It is interesting to compare this result with a similar valuation study done by Sitotaw (2003).The result of valuation of Wabi Shebele Langano recreation site (which faces Bishangari across Langano) shows that as the number of years of education increases the visitation rate decreases. Being similar sites the mix of visitors to the two locations seems to vary in this respect.

The variable the length of the visit represented by DAYS has a significant and negative sign. The usual explanation for this may be that the longer the duration of the trip the fewer the trips taken, this may explain the inverse relation between visitation and DAYS. The binary variables of substitute sites Bekele Mola, BM and WEYNEE, have shown an expected result. WEYNEE has a positive and significant influence on visitation to Bishangari. More over, even though insignificant, visit to BM has a positive effect on visit to Bishangari. Being substitutes this result is in conflict with theory. Our expectation was that those visitors who name a substitute site would visit Bishangari less frequently. In fact one should also consider the possibility that those visitors most interested in wilderness outdoor recreation might have actually failed to successfully come up with a valid substitute for Bishangari Ecolodge (and that explains why there was a great number of item non responses for this variable),since the lodge offers a rather unique combination of features. The fact that nearly 95% of the respondents made it a point to visit Bishangari Ecolodge before leaving home suggests for many the single minded purpose of the trip and the irrelevance of alternative sites closes to home in the decision making.

The variable group at 10% significant level presents a positive and significant influence to visit to Bishangari.

The variables AGE, GENDER, MARITAL, and CITIZEN are found to be insignificant determinants of visit to Bishangari lodge.

Estimation of demand for the recreation experience and welfare calculations

We use the estimated coefficients on the distance cost and travel time cost (that is DISTCOST and TIMECOST) to calculate welfare measures. The first step to arrive at welfare measures is to estimate statistical demand relationships for the recreation experience as a whole. The demand function for visits is constructed by relating visitors distance cost, because it has shown significant effect on visitation, with their number of visits to Bishangari lodge. The exponential function is selected in this study because the benefit estimates from the power function are not defined.

The linear semi semi-log travel cost model hypothesis is:

$$LnV_{ij} = \beta_0 \_ \beta_1 DISTCOST_i + \varepsilon_i$$

Where:

V_{ij} = individual i's annual visits to site j
$DISTCOST_i$= Distance travel cost of individual i
β_0 = the sum of the values of all other significant variables (assuming at their mean values) and the constant term in the regression model
β_1 =Coefficient of distance travel cost of individual i

ε_i =residual assumed to be distributed normally $(0,\sigma^2)$,with mean=0 and variance= σ^2

The estimated demand function for visitation to Bishangari ecolodge is:

$$LnV_{ij} = 0.45587 - 0.006341 DISTCOST_i$$

The recreational benefit flowing to each individual is the area under this estimated demand function. The value of this area is calculated by transforming the above demand estimation equation into an exponential function and integrating the inverse demand function between 0 and the average number of visits, 1.766. This value is

estimated to be Birr 2700 for the average number of visits. The recreational benefit of the site per visit per person was, therefore, estimated at birr 1500.

The annual report of Bishangari shows in the last 12 months the total number of visit to the lodge is 2629.Therefore, the estimated individual recreation benefit per visit per person can translated into total annual on-site recreational benefit as follows:

Birr1500x2629 visits=Birr 3,943,500

Therefore, the total annual on-site recreational benefit of the site was estimated to be 3,943,500 Birr. Using the exponential demand function, consumer surplus (CS) for the average number of visits is calculated as the area below the demand curve and above the average travel cost of Birr 1,234 .Thus, individual consumer surplus (CS) for the average number of visits is approximated to be 820.

This consumer surplus per visit can be translated into aggregate consumer surplus for the total number of 2970 visits for the 12 month period before the survey, which is approximated to Birr 2155780

Chapter 5
Conclusions, limitations, and Suggestions for further research

The economically efficient use of a natural environment requires a balancing of a net returns to each of its possible uses. The resource allocation decision depends in part upon comparing recreational values with the value that could be derived from other uses (such as development, traditional agriculture). If recreational values are not considered, the allocation of natural environments between preservation (recreation) and development uses may be incorrect.

The sound design of policies that relate to federal and regional parks and reserves management is based on the knowledge of both the costs and benefits associated with maintaining a recreation site. Since access to this type of recreational areas is only subject to entry fees that clearly underestimate the maximum willingness to pay by most visitors, the true value of recreation sites to the public is unknown and must be estimated using non-market valuation techniques.

The goal of this paper is to assist planners and decision-makers in increasing the input from economic valuation by presenting a sound valuation technique and procedure in order to take the best possible road towards a sustainable future. To achieve this it uses on-site survey data from Bishangari ecolodge to estimate the use value of the recreation site by employing a truncated count data model of recreation demand. The Travel Cost Method of valuation has been used to recreation demand analysis. Though the problems of getting reliable data in the process of estimation of natural resources very high, it is practically possible to put monetary values on outdoor recreation. This in turn can be used as an input into the decision-making process, along with important social, cultural and other considerations.

The regression results showed that distance travel cost, number of days of stay at Bishangari, income, education, Weynee substitute site and group travel are important determinants of the recreation demand of the site.

The coefficient of distance travel cost presents negative and significant figure. It yields a negatively slopped demand curve for visit/year. This implies that an increase in travel cost reduces the number of visit to the site.

It is clear that the omission of travel time is a serious source of bias in travel cost valuation studies. To avoid this travel time has been included with in the model specification. The result shows that even though it is negative its effect is insignificant.

The coefficient of income is positive and highly significant implying that the demand for recreation increases as visitor's income increases. The number of days stayed at Bishangari has a significant and inverse impact the on number of visitation days per year to Bishangari.

Group visits has a significant and positive influence on the visit to Bishangari, showing that group visits have more impact than single visits on the total number of visit to the site. Education has also a positive and significant impact on visit to Bishangari. More educated visitors visit the site more frequently than less educated ones.

Visit to Weynee lodge has resulted in an expected positive and significant sign. Generally those visitors who admitted to visit or to have other substitute site are expected to visit Bishangari less frequently. It may be that the visitors may not grasp the idea of substitute site, resulting in wrong answers.

The recreational benefit computed from the regression analysis shows that the aggregate on-site recreational benefit per visit amounted to birr 820.The expected total annual benefit of the site was 3,943,500 Birr. Records show that the enterprise is getting only about 25% of the true recreational benefit of the site for the survey 12 months. When compared to the net-economic benefits the bishangari lodge recreation site, the economic returns the company collecting is very low. This is particularly the case when the relative return to the ecotourism area is considered in terms of high accommodations costs and investment expenditures.

To conclude as in every application of the travel cost method substantial research judgment has been necessary in some aspect of the analysis and some simplifications have been made. Further research is necessary to fully examine the robustness of the welfare values derived from Bishangari recreation area to be used as the basis for the enterprises management decision. For example future work is warranted that look at the sensitivity of the results to alternative ways of approaching the measurement of travel cost and the estimation of the opportunity cost of travel time, to the stratification of observations according to the special characteristics of the visitor and the length of their stay.

Obviously this exercise has shown the importance of valuation of wilderness recreation areas. Of particular emphasis is that natural resources are not properly examined with appropriate and well-defined scientific approaches.

It is important to note that this study has considered only the use value of the resource in question. For such biodiversity reach areas use value constitute a small portion of the value of the wilderness recreation area.Further it is very important to note that the demand function estimated is a demand of the recreation area

tothowhovisit Bishangari. With some simplification this demand function can be extrapolated to the total demand curve of the site to the country.

REFERENCES

_____Africa Recovery Journal, Vol.13#1(June 1999).

_____Country Commercial Guide, American Embassy SanJose, 2000. http://www.incostarica.net/docs/commercialguide, Oct. 1, 2001.

_____Charles river Associates, 1981.

Bateman, lan J.and Turner, R.K. (1993) : "Valuation of the Environment, Methods and Techniques," in Turner,R.K. (eds.),Sustainable Environmental Economics and Management:Principles and Practices,Belhaven Press,London.

Berman, -Matthew-D. Kim, -Hong-Jin. "Endogenous On-Site Time in the Recreation Demand Model". Land-Economics, 75(4), November 1999, pages 603-19.

Beckere G.S. (1965): "A Theory of the Allocation of Times." Economic Journal,V.No.75.

Bowes,M.D. and J.B. Loomis.(1980): "A Note on The Use of Travel Cost Models.With Unequal Zonal Population." Land Economics,V.56.

Brian W.van Wile et al, (1996). "Time Bias in Recreation Benefit Estimates." Water Resouce.Res.6: 700-4.

Brookshire, D.S, M.A.Thayer, W.D. Schulze and R.C.d'Arge (1982), 'Valuing Public Goods: A Comparison of Survey and Hedonic Approaches', American Economic Review, 72,165-77.

Brown, G., and M.Plummer, "Methods for valuing Acidic Deposition and Air Pollution Effects", State of Science Part A National Acid Precipitation Assessment program, Report Number 27, Washington D.C 1990.

Brown G. and Henry,W.(1989): "The Economic Value of Elephants," LEEC Paper.

Button, K.J. (1993): "Transport Economics." 2nd ed,Aldershot,Edward

Elgar.Cesario, F. (1976). " Value of Time In Recreation Benefit Studies." Land Economics 52,32-41

Cesario, Frank J., and Jack L.Knetsch. "Time Bias in Recreation Benefit Estimates."Water Resouce.Res.6 (1970): 700-4.

Clawson,Marion "Methods of Measuring The demand For and Value of Outdoors Recreation."Washington DC:Resource for The Future Reprint No,10,1959.

Daniel J.Stynes,George I Peterson and Donald H. Rosental(2001): "Log Transformation of Bias in Estimating TCM" Land Economics,V.62.No.1

Dulude, Julie. "Trouble In Paradise. Critics Say Lack of Protection Endangers Costa Rica's Famed Nature Preserves." The San Francisco Chronicle. December 28,2000.

Du Yaping (1995): "The Value of Improved water Quality for Recreation in East Lake,Wuhan,China:published in Yunan,China.

Ecolodge Plc,sales report and fliers.

Edward B. Barbier, Mike Acreman and Duncan Knowler. "Economic valuation wetlands: a guide for policy makers and planners." Ramsar Convention Bureau (Gland, Switzerland, 1997).

Garen, Eva J. "Appraising Ecotourism in Conserving Biodiversity." Foundations of Natural Resources Policy and Management. Clark, Tim, Willard, Andrew, and Cromley, Christina eds. Yale University Press: New Haven, 2000. 221-251.

Green W.H.(2000): "Econometric Analysis." 4th edition, Prentice-Hall Inc., NJ, 07458.

Freeman, (1993), "Comparing the Economic Value of Mountain Biking Estimated Using Revealed and Stated Preference." Journal-of-Environmental-Planning-and- Management; 41(2), March 1998.

Haspel, A., and R. Johnston. "Multiple Destination Trip Bias in Recreation Benefits Estimation." Land Economics 58(1982)364-72

Hanley,N.,Shogren J.F. and White B.(1997) Environmental Economics,London,Macmillan.

H.Ceballos-Lascurian. "Tourism, Ecotourism and Protected Areas." Parks, vol 2, No.3, November 1981,P.

Kateregga E. (1997): "Valuation of Recreation Sites in Uganda,",DE,Makerere University, Uganda.

_____IUCN, UNEP, WWF(1998).Caring for the Earth:A Strategy for Sustainable Living.Gland,Switzerland.

Kling, -Catherine-L. (1989): "The Gains from Combining Travel Cost and Contingent Valuation Data to Value Non market Goods", Land-Economics; 73(3), August 1997, pages 428-39.

Lisa C. Chase David R. Lee William D. Hulze, and Debora J. Andersen.1998"Ecotourism Demand and Differential Pricing of National Park Access in Rica."

Maddalla G.S. (1983): "Limited Dependent and Qualititative Variables Econometrics." Cambridge University Press, Cambridge.

Mahmud M. (1988): "Measuring Environmental Benefit of a Recreation Site:An Economics Estimation of Sodere Recreation Area,"M.SC. Thesis,A.A.U.

Mathew J. Walpole, Harold Good Win, Kari G.R. Ward. 2001 Pricing Policy for Tourism in protected Areas. Lesson form Komodo National Park, Indonesia. Sc.

Mendes I. (2002): "Travel and Onsite Recreation Time:An Emperical Approach to Value the Recreational Benefit of Penda-Geres National Park,16-17 October Lisbon.

M.Epler Wood, Membership directory Background, Ecotourism Society 1994 International membership Directory, Ecotourism Society, Bennington, Vermont

Mitchell, R. and R.Carson (1989), "Using Surveys to Value Public Goods." Resource

for the Future, Washington, D.C.

McConnell, K. E., "On-Site Time in the Demand for Recreation," American Journal of

Agricultural Economics, 74(4), November 1992, pp. 918-25.

McConnell K.E.,and Strand,I (1981): "Measuring the Cost of Demand in Recreation

Time Analysis:an application for sport Fishing", American Journal of Agricultural

Economics.

McKean, John R.; Johnson, Donn M.; Walsh, Richard G., 1995, on the paper "Valuing Time in Travel Cost Demand Analysis: An Empirical Investigation,"

Perman R.,Ma Y., McGilvray J. and Common M.((2nd ed 1999) Natural Resource and Environmental Economics,Edinburgh,Longman,pp. 403-435

Peter A. (1996): "Project Appraisal and Valuation of The Environment", Macmillan Press Ltd.

R.dowling,'Ecotourism in Australia & W.australia;Touristics,vol 13,No.2

Richard Hatfield (2004). "The Economic Value of The Mountain Gorilla Forests: Benefits, costs and their distribution amongst stakeholders", A paper given to the International School of Tropical Forestry, Yale University Spring 2004 Conference.

Roberto Mart´ýnez-Espi˜neira_and Joe Amoako-Tu. "Recreation Demand Analysis under Truncation, Overdispersion, and Endogenous Stratification: An

Application to Gros Morne National Park"Economics, St. Francis Xavier University

Rosenthal, Donald H., "The Necessity for Substitute Prices in Recreation Demand Analyses," American Journal of Agricultural Economics, 69(4), November 1987, pp. 828-37.

Sharawi A., (2000) : "The Recreational Value of the Khartoum Sun Forest," Forsest National Corporation.

Sitotaw Enyew (2003):"Valuation of the Benefits of Out-Door Recreation Using Travel Cost Method: The Case of Wabi-Shebele Langano Recreation Site." M.SC Thesis A.A.U.

Smith,V.K.,W.H. Desvousges (1986), "The Generalized Travel Cost Model and Water Quality Benefits: A Reconsideration", Southern Economics Journal,59,371-81.

Smith,V.K. (1988), "Selection and Recreation Demand", American Journal of Agricultural Economics,70,29-36.

Sorg, C., J.Loomis, D. Doonely, G.peterson, and L.Nelson. "Net Economic Value of Cold and Warm Water Fishing in Idaho." Resource Bulletin RM-11,USFS,USDA,Rocky Mtn.Forest and Range Expe.Station,Fort Collins,CO,1985.

Terefe F. (2000): "Measuring Economic Value of Tis Abay Water Falls: Comparison of Contingent Valuation and Travel Cost Method" M.SC,Thesis,A.A.U.

Theodros Atlabachew (2003). "Ecotourism As An Alternative For The Development Of Tourism In Ethiopia", The Tourism Symposium on the Occasion of the World Tourism Day. Québec City, Canada, 2002.

Willis, Ken G.; Garrod, Guy, "Valuing Open Access Recreation on Inland Waterways: On-Site Recreation Surveys and Selection Effects," Regional Studies, 25(6), December 1991, pp. 511-24.

_____World Conservation Monitoring center (2006)

_____WTO (2006).

Ziemer, Rod F., Wesley N.Musser and R.Carter Hill (1980): "Recreations Demand Equations: Functional form and Consumer Surplus."American Journal of Agricultural Economics,V.No.62.

Questionnaire for Measuring Demand and Willingness to Pay

Date .....

Serial no.....

Demographic characteristics

A.1 Name .....

A.2 Age **.....years**

A.3 Gender of the respondent: **Male □ Female □**

A.4 Marital status (please circle one)

1 Single 2 Married 3 Separated

4. Divorced

A.5 Household size**.....(no of family members)**

A.6 Occupation **(multiple answers are possible)**

1. Government employee 3.Domestic private sector employee

2. N.G.O, U.N, A.U, E.C and other international organization Employee 4.Foreign company employee 5.Own business 6.Student .Unemployed

8.Other (Please specify.....)

A.7 What is your personal income (Birr/month)
(Please circle one)

1.**0-5000birr** 2.**5000-10000birr** 3.**10, 000-20,000 birr**

4.20, 000-30,000 birr 5.30, 000-50,000 birr 6.50, 000-100,000 birr 7. **More than 100,000 birr**

(Please indicate the currency if other than birr i.e. $, birr, Euro...).....

A.8 How many people in your family (Including yourself) earn their **own income**?

(Either from employment or business).....

Please list family income

No	Name of Household Member	Income from business	Income from employment (month, year...please specify)	Income from other sources(specify)	Remark
1					
2					
3					
4					

A.9 Highest level of education .....

A.10 Citizenship

Ethiopian national □

Foreign national □**(specify).....**

Travel characteristics

B.1 How many times did you visit national parks or nature-based recreation in Ethiopia with in the last 12 months for recreation purpose? **No. of times:.....**

B.2 How much did you spend on eco-tourism (nature based tourim) during the last year**?.....Birr**

B.3 How many times did you visit Bishangari lodge with in the last 12 months ?**No. of times:.....**

B.4 How much did you spend on visiting Bishangari lodge in the last 12 months**?.....**

B.5 How many trips would you plan to take to Bishangari in the next 12months?**.....trips**

B.6 Do you think that you would take more trips in the next 12 months than the trips you took before to Bishangari?

(Please circle one)

1.Yes **2.No**

B.7. Which period is your usual preference to visit Bishangari?

1.weekdays (Monday_Friday) 2.Weekends 3.Public holidays

B.8 When was the time of your most recent recreation trips to Bishangari Lodge during the last 12 months (please underline)

January February March April May June July August September October November December

B.9 If you were not visiting Bishangari on this trip, what would you most likely be doing?(tick your option)

Working at job..... Watching TV.....

Housework/shopping.... Other (specify).....

B.10 How much would you ask your institution to pay you if you were asked to be at your job this time?.....**Birr**

B.11 How did you come to Bishangari lodge from Addis Ababa

By my own 4wd car ☐ In a rented 4wd car ☐

By Company 4wd car ☐ In a Company bus ☐

Other (please specify).....

B.12 If you are not from Ethiopia, you came to Ethiopia for:

.....Conference attendance. .....Business

.....visiting friends/relatives ..... Travel

.....Recreational purpose..... Other.....(specify)

B.13 Have you visited other similar sites before?

1. Yes 2.No

B.14 If yes, which sites did you visit? (Please rank your preferences of the recreation sites)

Name	Rank
Wabi Sheble Langano	
Bekele Molla	
Abule Basuma	
Woynie	
Other (specify)	
Other (specify)	
Other (specify)	
Other (specify)	

B.15 What is the name of other places you have visited enroute to Bishangari during this specific trip?

.....

.....

.....

.....

C Time and cost factors

C.1 How long is the **total duration of this specific trip?.....days**

C.2 How long is your duration of stay **at/inside Bishangari lodge?.....days or.....hours**

C.3How much did you spend on your trip from Addis Ababa to This lodge

Transportation cost (car rental...)..... .....

Fuel.....

Food and drink.....

Accommodations.....

Other.....

Total.....

C.4 Please estimate the time and distance it takes you to get to this lodge From your initial point of departure with in Ethiopia?**...hours...Km.**

C.5 How many years have you recreated at Bishangari lodge?**...Years**

C.6 Is there a difference between the **number of trips you planned** to take to Bishangari and the **actual trips you took** during the last 12 months?

1.Yes **2.No**

C.7 If yes, what do you think the cause of this difference?

1.Income constraint

2.Due to leisure time constraint

3.distance of the site

4.Due to deterioration of services at this site

5.Due to preference to other sites

6.Visited Bishangari more than planned

7.Other reasons (specify).....

C.8 How many times **(no of times)** have you visited Bishangari in the Year:

2006 ..... 2005.....2004.....

2003.....2002 ..... 2001.....

C.9 How many times (no of times) **did you visit any other recreation areas in the Year**:

2006.....2005.....2004.....

2003.....2002 .... 2001.....

D. Characteristics of the group

D.1 Are you traveling with a group?

Yes □ □ **Go to Question D.2**

No □ □ **Go to Part E**

D.2 Total number of members of the group? .....

D.3 what is your social or kinship relationship with other members of the group (multiple answer is possible)

Friends.....Relatives.....Colleagues.....

Family.....Other (specify)

E. Trip activities

E.1 what is the purpose of this trip?

Vacation/recreation……

..Educational/scientific……..Retreat……

Work (Seminar…) ……Other (specify)……..

E.2What are the types of recreation activities you have engaged in at Bishangari:

Fishing ……..

Mountain-biking……..

Hiking into the forest……

Forest walking……..

Bird watching……

Hippo-spotting……..

Boat ride…….. ……..

Other (specify) ……

E.3 Have you combined visiting friends/relatives to this trip?

Yes……..No…….

E.4 Have you combined business with this trip?

Yes…… No……

E.5 What is the types of accommodations you have used at Bishangari?

Godjo (suite) ……..Godjo (regular)……Tukul……..

E.6 Why did you choose to visit Bishangari lodge (multiple answer is possible)

The nature element……

The ecology preservation element……

The comfort of the accommodation…….

The food/cuisine……

The trip to the forest……

The tranquility, quietude and peace……

The seclusion element……

The lake……

The service/hospitality element……Other (please specify)……

E.7 How many are the number of other substitute (similar) sites you have Considered when deciding to visit Bishangari lodge:

One …….Two…..Three …….Four …….. Five and above ……..None

E.8.Do you know any other ecotourism area that you would like to visit instead of Bishangari? **Yes……No……**

E.9 If yes, which other single site do you visit frequently?……

E.10 If yes, what would be your total cost to visit that site?**……..Birr/visit**

E.11 Would you like to have improved/additional recreational services provided by the Bishangari administration?

____ Yes _____ No.

E.12 If yes, what types of improvements would you like to see at this site?

(i) Recreational Site:

Sight-seeing____ Bird-watching___ Relaxation____

Walking tracks__ Exercising_____ other_____

(ii) Information about the natural area:

Maps _____ Information Sign _____

Precaution Sign _____ Tourist Information Centre_____

(iii) Traffic:

Road Conditions ___ Traffic Safety _____ Traffic Sign ___

Parking___ easy access via the lake__Miscellaneous_____

(iv)Other services

Waste disposal _____Lavatory _____

Food and Beverage Services _____

Accommodation _____Others _____

E.13 What is/are your most important motive behind visiting this and other

wilderness area **(multiple answer is possible)**

For sport and play _____

As an experience to be shared with others__

Aesthetic-religious reasons_____

Health reasons_____

To observe nature_____

Get away from cities and crowds_____

Others (specify)_____

E.14 Did you face any disappointment at bishangari

Yes.....go to E.16 No ..... Go to F

E.15 Please indicate your disappointments

Too expensive.....Crowded.....Dirty.....Unsafe.....

Bad weather .....

Unavailability of the activities at the time of visit .....

Other (please specify)

.....

DECLARATION

I, the undersigned, declare that this thesis is my own work and has never been presented in any other university. All sources of material used for this thesis have been duly acknowledged.

Declared by,

Name: _____

Signature: _____

Date _____

Confirmed by advisor:

Name: Wassie Berhanu

Signature: _____

Date: 12/06/08