

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,**

**KUMASI**

**COLLEGE OF ENGINEERING**

**DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING**

**EVALUATING RESOURCES AND FEATURES SUITABLE FOR  
ECOTOURISM; A CASE STUDY OF JUABOSO BIA DISTRICT**

**A THESIS SUBMITTED TO THE DEPARTMENT OF MATERIAL  
ENGINEERING, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND  
TECHNOLOGY, KUMASI, IN PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF  
SCIENCE IN ENVIRONMENTAL RESOURCES MANAGEMENT**

**BY**

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**APRIL, 2014**

## DECLARATION

I declare that I have personally, under supervision, undertaken the study therein submitted, and that except portions where references have been duly cited, this declaration is the outcome of my research.

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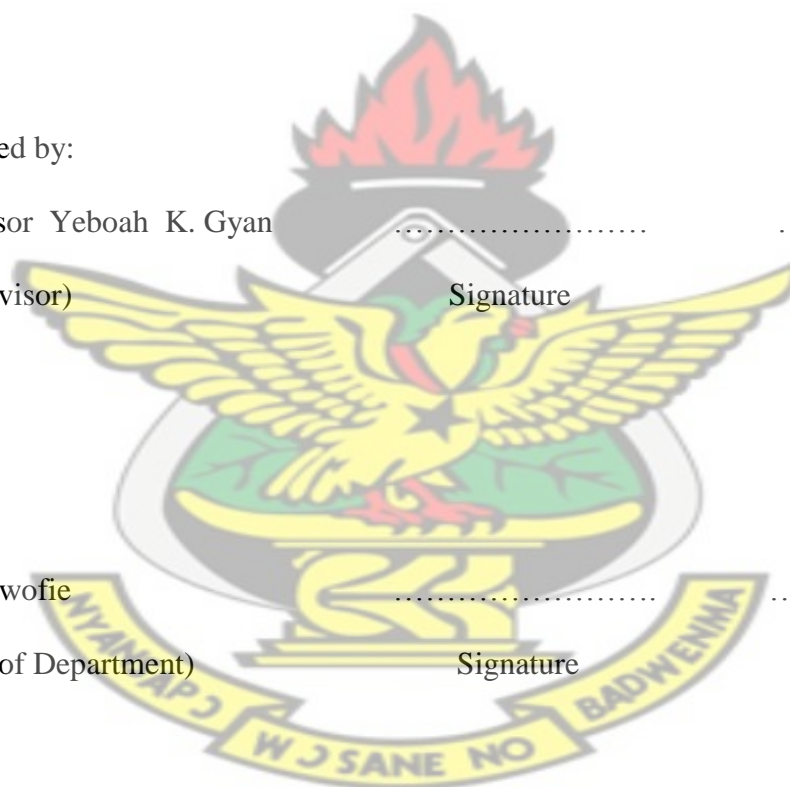
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Signature

Date



## DEDICATION

I dedicate this book first and foremost to the almighty God for his protection and guidance for me throughout my stay in this institution, and also to my Father Mr. Kwame Berchie for the love and support he gave me.

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## ACKNOWLEDGEMENT

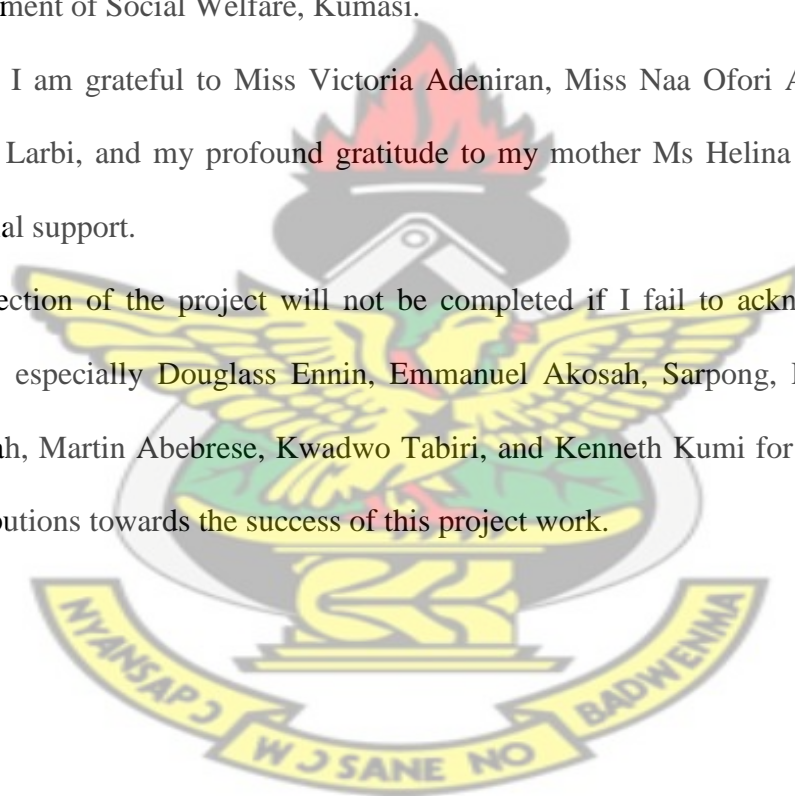
A heart of gratitude is of a wise person, so says the sages. I therefore wish to first and foremost, thank the Almighty God for his grace and mercy that has sustained me throughout my University education as well as the preparation of this work.

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## ABSTRACT

This study identified and assessed the potential of natural resources Bia in biosphere reserve in the Juaboso Bia District which could be used for tourism. This study assessed resources and features suitable for ecotourism in the Juaboso Bia District. The study revealed that there were many resources in the biosphere reserve which suits ecotourism and the development of tourism. Those include the vegetation, plunge pool and animal species. However, certain illegal activities in the conservational area such as gun shooting, poaching and tree felling among others pose a threat on the survival of animal species in the area as well as the vegetation. It is recommended that a joint government-private sector partnership arrangement is sort to protect natural resources and improve on ecotourism in the area. Also formation of management committee, improvement of the conditions of service of workers in the Bia conservation area, intensive public education and severe punishment for culprits can help improve ecotourism in the area.



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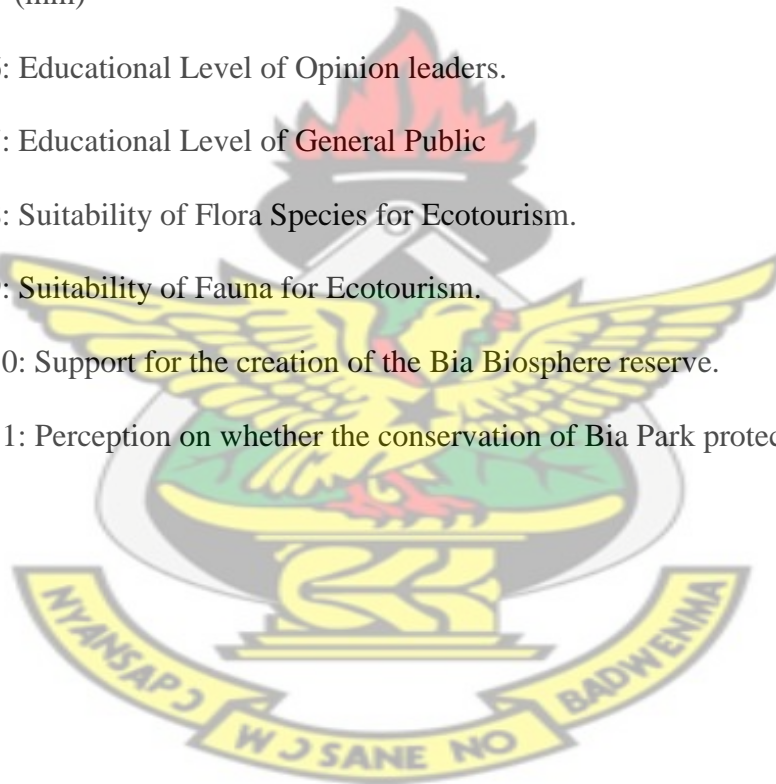


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## LIST OF ABBREVIATIONS

BBR	Bia Biosphere Reserve
BNP	Bia National Park
CBE	Community Based Ecotourism
SPSS	Statistical Package for Social Sciences
RA	Rainforest Alliance
TIES	The International Ecotourism
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Program
USAID	United States Agency for International Development
UNDP	United Nations Development Program
UNWCED	United Nations World Commission on Environment and Development
WWF	World Wide Fund



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

The Bia forest reserve was created in 1935 and named after the Bia River which drains the area. It became an official national park in 1974. In 1985 the park was named a biosphere reserve and a UNESCO world heritage site. Each biosphere reserve is intended to fulfill three basic functions, which are complementary and mutually reinforcing: these are (1) a conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation; (2) a development function - to foster economic and human development which is socio-culturally and ecologically sustainable; and (3) a logistic function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

Ecotourism is often perceived as an excellent tool for promoting sustainable development in developing countries. Many view ecotourism as a viable way to protect the natural environment and create social and economic benefits for local communities. According to (Weaver, 1999) ecotourism which is now widespread among tourism planners and marketers, is rationalized by a number of popular assumptions regarding the Sector's potential economic, environmental, and socio-cultural benefits. Regardless of the fact that ecotourism is not being properly planned and implemented in many instances; it has continued to gain popularity over the past two decades and has developed into a worldwide phenomenon that shows no signs of slowing down. Ecotourism is currently the fastest growing sector of the global tourism industry (Place, 1998; Roberts and Thanos, 2003). The phenomenon has

been conceived as a potential for generating income in developing countries. Foreign exchange is the ultimate benefit of ecotourism which in turn provides revenue for developmental projects in developing countries. Aside this, it is a major source of employment to industry players especially community members. Most estimates indicate that the demand for ecotourism is growing at an annual rate of 10 to 30 percent (Honey, 1999). Now that ecotourism has reached such stature it is especially important to scrutinize its effectiveness as a strategy for sustainable development, and search for ways to improve policies and practices in this sector. Ecotourism has more promise for achieving sustainability than alternative types of land use such as agriculture, cattle grazing, logging, or mass tourism.

In order to increase the likelihood that ecotourism achieves goals of sustainable development in Ghana, all of the key actors must begin to take more proactive measures in order to ensure that ecotourism is carefully planned and implemented. International tourist arrivals in Ghana have increased from about 85, 000 tourists in 1985 to more than 325,000 tourists in 1997, while receipts increased from about only \$19.52 million in 1985 to \$266 million in 1997. Presently, tourism is estimated to account for more than 16% of Ghana's total foreign exchange earnings, which places the industry as the third highest export after minerals and cocoa (High Street Journal, 1998).

For natural tourism to be sustainable and thus acceptable to developmentalists, conservationists and environmentally conscious tourists a number of environmental economic and social requirements have to be fulfilled. This has led to the introduction of ecotourism as a nature tourism also called eco-label. Ecotourism is a



form of tourism that strives to minimize ecological or other damage to areas visited for their natural or cultural interest (Microsoft Encarta, 2009). Definitions of ecotourism focus on environmentally responsible tourism (Ceballos-Lascurain, 1993). that provides direct benefits to the nature conservation area and to the economic welfare of local residents (Ziffer, 1989).or a natural tourism that promotes conservation and sustainable development. Since the publication of the Brundlandt report about *Our Common Future* (World Commission on Environment and Development, 1987). tourism has often been associated with *sustainable development*, a policy and management orientation which aims at managing all assets for increasing long-term socioeconomic well-being of host communities and encourages practices that minimize degradation and damage to tourism resources (Cater, 1993; Slater, 1991; Ziffer, 1989). Although some scholars find the original formulation of this concept unclear or rather utopian, proponents argue that tourism, if planned carefully, can be a sustainable alternative to other developmental options (Butler, 1990; Gunn, 1991; Owen, *et al.*, 1993). Skeptics, on the other hand, argue that because of its inherent resource properties conventional mass tourism has failed to accomplish the goals of sustainable development by creating various adverse economic, socio- cultural, and environmental impacts (Cater and Goodall, 1992; Seneviratne, 1989). These negative impacts of tourism have been well documented and discussed in the past (see de Kadt, 1979; Murphy, 1981; Holder, 1988; Mathieson and Wall, 1982; Britton, 1982; Butler, 1990). Ecotourism, a more recent alternative form of tourism behavior, is gaining prominence as the sustainable option that may serve as a universal remedy for ameliorating the developmental ills (e.g., congestion, pollution, inflation, loss of cultural identity) associated with traditional

mass tourism (Butler, 1990; Gunn, 1991; Valentine, 1993; Wight, 1993; Allcock, 1994).

Although there are numerous definitions of ecotourism, however, for the purpose of this study, ecotourism is defined as 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 while producing economic opportunities that make the conservation of natural resources beneficial to local people. (The Ecotourism Society (TES), 1991). In line with this definition, it is argued that ecotourism provides host communities with necessary economic incentives that will help prevent the depletion and degradation of tourism resources and contribute to the enhancement of the quality of life of host communities (Boo, 1990; Cater, 1993; Farrell and Runyan, 1991; TIES, 1993b; Wight, 1993; Ziffer, 1989). Ecotourism must account for social, economic and environmental implications, in order to succeed. A much more balanced and integrated approach, founded on the guiding principles of sustainable development, is essential to maximize the benefits and minimize the negative impacts of ecotourism in Ghana.

## 1.2 Problem Statement

The Forest in Ghana is currently been lost at an alarming rate, but an estimated 90% of poor people across the world depend on forest resources for at least part of their income (USAID, 2006). There is growing recognition of the importance of protecting forests for their biodiversity, ecosystem services and mitigation against climate change, as well as an ever-increasing rate of global deforestation (UNEP,

2009).In line with these objectives, the protection of forests has been the focus of global conservation targets since the 1992 Earth Summit in Rio de Janeiro.

### **1.3 Research Questions**

The study sought to find answers to the following research questions those are:

- i. Does the Bia forest reserve have certain natural resources of scientific and aesthetic beauty which could be used for tourism?
- ii. Are these resources suitable for unique ecotourism?
- iii. What are the attitudes of the people towards sustainable ecotourism development?

### **1.4 Objective of the study**

To evaluate certain natural resources of scientific and aesthetic beauty this could be used for tourism.

To assess how these natural resources are suitable for unique ecotourism.

To determine attitudes of the people towards sustainable ecotourism development

### **1.5 Justification**

Tourism depends on pristine environment. The very survival of any tourist industry depends on this. Realizing the potential of generating income from tourism, Ghana is now seriously promoting tourism. The Bia forest reserve is one of the forest reserves which seriously needs protection from degradation. The current use of the area for eco-tourism could open up the area and consequently affect some of the flora and fauna which are the resource which attract visitors to the reserve.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews literatures on the topic of the study. It basically covers a review of studies by researchers as well as other international, national bodies and governments in relation to ecotourism. The sub-topic presented in this chapter include UNESCO Biosphere Reserve Concept/MAB Program, definitions of tourism and ecotourism, Ghana's Biosphere Reserve, ecotourism's potential for generating income and other socio-economic benefits, and tourist resources and tourist attractions in Ghana. The Historical account of tourism development in Ghana, parameters of ecotourism, ecotourism and sustainable development are also included. Ecotourism and environmental sustainability, and community involvement and ecotourism are also captured.

#### **2.2 UNESCO Biosphere Reserve Concept /Man and the Biosphere (MAB) Program**

The Bia reserve has been designated as a biosphere reserve by the UNESCO (MAB) Program definition, biosphere reserves are areas of terrestrial and coastal ecosystems that are internationally recognized within the framework of UNESCO's Man and the Biosphere (MAB) Program, and collectively constitute to a World Network. Biosphere Reserves are intended to fulfill three basic functions and these include;

- i. A conservation function; that is to contribute to the conservation of landscape Ecosystems, species and genetic diversity
- ii. A development function; that is to foster economic and human development which is Socio-culturally and ecologically sustainable

- iii. A logistic function; that is to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

Each individual country has sovereign jurisdiction over its biosphere reserves and enacts legislation in respect of the establishment and conservation of the biosphere reserves, or re designation of its other reserves as biosphere reserves under the framework of the UNESCO (MAB) Program's biosphere reserve concept. Each biosphere reserve consists of a core area, a buffer zone, and a transition area, with the core zone requiring absolute legal protection.

### **2.3 Definitions of Tourism and Ecotourism**

It is important to keep in mind that ecotourism as an activity is not new. In Oriental society, ecotourism occurred around the year 500 B.C. when Confucius toured six states in China (Deng, *et al.*, 2003). In Western society, safaris in Africa became popular among the elite about two centuries ago (Hvenegaard, 1994; Orams, 1995). In addition, visits to National Parks in the United States became popular in the late 19<sup>th</sup> century (Beaumont, 1998).

Tourism from which ecotourism is embedded has been defined as an act of travelling for pleasure to benefit from a particular service of activity which is not available at home (Microsoft Encarta, 2009). The earliest formal definition of ecotourism is primarily recognized to have been conceived by Ceballos-Lascurain, (1987), who defined it as; traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild



plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas (Ceballos-Lascurain cited in Blamey, 2001). Although the term “ecotourism” was coined by Ceballos-Lascurain, the concept was discussed by Hetzer, (1965) when he argued that tourism should have minimal impacts on the environment and host cultures, maximum respect for host cultures, maximum economic benefits to the host country, and maximum recreational satisfaction to participating tourists.

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In spite of this, ecotourism has been explained and defined in an uncontested manner. A multiplicity of definitions and explanations have been associated to the phenomenon, some often contradictory definitions of what ecotourism is, have been proffered and there is no single agreed definition of what it means. A study by Fennel (2001) unearthed 85 definitions of the term ecotourism premised on the variables of conservation, education, culture, benefits to locals and reference to where ecotourism occurs, especially in the natural areas.

The definitions of ecotourism leave much to the interpretation of the reader, but they more or less cohere around three criteria, namely, attractions being predominantly nature-based, visitor interactions being focused on learning or education, and finally, experience and product management follows principles and practices associated with ecological, socio-cultural and economic sustainability (Weaver and Lawton, 2007).Elucidates in another context that ecotourism is often proposed as being able to ensure environmental conservation while enabling economic benefits to accrue to the local communities. The most common denominator with respect to ecotourism is that it is nature-based. As not deviating from the explanation given by the



international body, The International Ecotourism Society (TIES) cited in a document by India's Ministry of Environment and Forest (2011), defines Ecotourism as 'responsible travel to natural areas that conserves the environment and improves the well-being of local people'. Such tourism is low impact, educational, and conserves the environment while directly benefiting the economic development of local communities.

Accordingly, in a fact sheet provided by TIES, it suggests that those implementing and participating in ecotourism activities should adhere to the following principles nature based, minimized impact, build environmental culture, provide financial benefits and empowerment for local people, raise sensitivity to host countries' political, environmental, and social climate (TIES, 2006).

Weaver (2008) underscored that ecotourism is a form of tourism that fosters learning experiences and appreciation of the natural environment, or some components thereof, within its associated cultural context. He further reiterated that ecotourism is managed in accordance with industry best practice to attain environmentally and socio-culturally sustainable outcomes as well as financial viability. This definition is quite fundamental to this discussion as it envisions ecotourism as nature based tourism, conservation supporting and sustainably managed to achieve social, environmental, cultural and economic sustainability. In relation to sustainability, Ecotourism Australia (2009) explains the phenomena as ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation.

The concept of ecotourism as supportive to the livelihood goals of local communities is further reiterated by Godwin (1996) in Weaver (2008) who defines it as low-impact nature tourism which contributes to the maintenance of species and habitats either directly through a contribution to conservation or indirectly by providing revenue to the local community sufficient for local people to value and therefore protect their wildlife heritage as source of income.

Despite the discussion presented here concerning ecotourism definitions and their evolution, Bottrill and Pearce (1995) argue that the increasing number of definitions have done little to clarify its meaning. In addition, Wall (1997) suggests that to define ecotourism in terms that are acceptable to all may be an impossible task. Considering ecotourism's complex reality, Page and Dowling (2002) argue that "ecotourism is more than a specific form of tourism – it is an ethic, a philosophy, an ideal..."

It is obvious from the above explanations that ecotourism has conservation, education, ethics, sustainability, traveling, impacts and local benefits as its main variables. However, in a critical context, while these definitions and explanations are effective in capturing the essence of what ecotourism is, it falls short in that it exclusively focuses on the motives of the traveler or tourist and not on the impacts that such travel has on the cultural and ecological environments.

## **2.4 Ghana's Biosphere Reserve**

Ghana currently has a number of wildlife-protected areas that have been designated as UNESCO biosphere reserves. One of these reserves is the Bia Biosphere Reserve (BBR). It was designated as such in 1983 and constituted into the network of

Biosphere reserves. It comprises of a continuous block of two adjacent forest reserves, namely the Bia National Park (BNP) and the Bia Resource Reserve (BRR). It covers an area of 355.62 km<sup>2</sup>. The BNP was so declared in 1974 by Legislative Instrument 881 of the Wildlife Reserves Regulations of the Republic of Ghana, for the purpose of absolutely protecting both the rich flora and fauna, which had never been exploited for timber, nor farmed. The BRR was also declared as such by the Wildlife Reserves Regulations LI 1085 and LI 1105 of 1976 and 1977 respectively, to allow for controlled timber exploitation. Prior to their being constituted as BNP and BRR respectively, both reserves together used to be one block of forest reserve called the Bia Tributaries South Forest reserve. This reserve was selected for reservation in 1935, and demarcated between 1937 and 1939 for the purpose of reserving the rich timber resources. It was also meant to protect the watershed system between the main Bia River, and the Manzan river a tributary of Komoe river in the neighboring country La Cote d'Ivoire). At the time of reservation, the two reserves were adjoined by other blocks of forest reserves, namely the Sukusuku, Tawya, Krokosua Hills, and the Bia North forest reserves. These served as "buffer zones" under the biosphere reserves concept. BNP and BRR have respectively been under the management of the Wildlife Department of Ghana since 1974 and 1976, whilst the management of the "buffer zones" have long since been under the care of the Forestry Department of Ghana, and they still continue to be.

## **2.5 Ecotourism's Potential for Generating Income and Other Socio-Economic Benefits from biosphere reserve**

Foreign exchange is the first that pops up in the memory once an economic benefit of the phenomena is discussed. Khanna (2000) reports that in India, tourism is

emerging as a key sector in the economy. It is presently India's third largest foreign exchange earner after garments, and gems and jewelry. The foreign exchange earnings from tourism during 1997–98 have been estimated to be about Rs.11264 crores (US \$3173 million). The rate of growth in foreign exchange earnings from tourism is exceptionally high (Khanna, 2000). In relation to this, TIES (2005) recaptures the fact that for over 40 world's poorest countries tourism is the second most important source of foreign exchange after oil. Honey (1999) estimates ecotourism market is growing at the rate of 10 to 15 percent per year, and contributes US\$154 billion in receipts. Honey (1999) further reports that foreign exchange from ecotourism has overridden the mainstay banana crop in Costa Rica and that it accounts for 80 percent of the income of the people living on the Galapagos Islands. Tourism revenues for the seven villages around the Belize Baboon Sanctuary rose from US\$8,500 in 1992 to US\$99,000 in 2000 (Lash, 2003).

Aside the foreign exchange benefit, the ecotourism industry is known as a source of employment to industry players especially community members. The most significant feature of the tourism industry is its capacity to generate large-scale employment opportunities, particularly in remote and underdeveloped areas (Khanna, 2000). In South Africa, nature-based tourism generates 11 times more revenue per year than cattle ranching on the same size of land, and job generation is 15 times greater (Honey, 1999). In the Monteverde area in Costa Rica, one ecotourism destination directly employs 43 staff, with 70 percent being local residents, whilst in Cuba ecotourism has been reported to generate over 54,000 direct employments (Ibid.). These people work as rangers and camping staff, in catering, selling fruits, handicrafts and also provide entertainment to the tourists. The direct

employment in the Indian economy during 1995–96 was about 8.5 million persons, accounting for about 2.4% of the total labor force. Estimates of indirect employment show that in total about 22 million persons derive their livelihood from tourism. Different forecasts of direct employment in the sector have been made, however, they underline the fact that tourism is growing to become an important economic activity. It is estimated that one new job is created in tourism every 2.4 seconds (Khanna, 2000).

Campbell (2004) has however remarked that most of the direct employment generated through ecotourism is predominantly unskilled and semiskilled, which includes boat drivers, waiters and domestic staff in hotels, depicting the fact that locals rarely occupy senior positions in ecotourism businesses. This has led to some analysts commenting that jobs created by ecotourism are of low quality and remuneration (Cater, 2006).

It also adds value to a multitude of human-made attractions such as monuments, palaces, forts and the unique rural and city environments. Thus, encourages preservation of monuments and heritage properties and helps the survival of art forms, crafts and culture (Khanna, 2000).

Moreover, ecotourism can provide markets for locally made goods especially from the productive sectors such as agriculture and fishing (Fennell, 2008). It also offers enormous potential for utilizing natural resources like landscapes, mountains, beaches, rivers etc. for the economic benefit of the population (ibid).



Another important feature of the ecotourism industry, which is of particular significance to India, is its contribution to national integration and the social transformation of the economic lives of people. Over 176 million domestic tourists visiting different parts of the country every year, return with a better understanding of the people living in other regions of the country and of the cultural diversity of India (Government of India, 2002).

Tourism has become an instrument for sustainable human development through poverty alleviation, environmental regeneration, job creation, and the other disadvantages. Ecotourism has also being known as a tool for social cohesion and that it binds people together. People from all walk of life come together to experience nature, thereby interacting with each other. The cultural heritage is preserved and extended to all those who patronize it.

## **2.6 Tourist Resources and Tourist Attractions in Ghana for Ecotourism Promotion**

Ghana has sunny equatorial climate and fertile well-watered soils which sustain and enchanting selection of wildlife, ranging from elephants to monkeys and marine turtles to crocodiles, as well as hundreds of colorful bird and butterfly species. More than 5% of the country's surface area has been accorded official protection across 16 national parks or lower-profile conservation areas, of which the most popular tourist destinations are the vast Mole National Park in the northern savannah and the forested Kakum National Park near the coast. Over recent years, Ghana has emerged as a pioneer in the field of community-based ecotourism, which aims to create a mutually beneficial three-way relationship between conservationists, tourists and



local communities. The Boabeng-Fiem Monkey Sanctuary, home to sacred troops of mona and black-and-white colobus monkeys, led the way in 1995, and it remains the flagship for more than two dozen other community-based tourism projects countrywide. These range from the award winning Wechiau Hippo Sanctuary in the Upper West and Amansuri Wetland Sanctuary in the Western Region to cultural sites such as the Domana Rock Shrine, set in the forests near Kakum National Park, and the painted houses and pottery of Sirigu in the Upper East (Ghana Tourist Board, 2008).

Volta Region is the most topographically varied part of Ghana. It hosts the country's largest concentration of community-based ecotourism sites, and offers outdoor enthusiasts some superb opportunities for hiking, rambling and mountain biking. Popular attractions include the sacred monkeys of Tafi Atome, a plethora of magnificent forests and waterfalls around Amedzofe, the country's highest peak on Mount Afadjato, and the impressive forest-fringed Wli Falls, which is the tallest cascade in West Africa (Ghana Tourist Board, 2008).

Not least among Ghana's Natural attractions are the suburb palm-lined beaches that line its 500km Atlantic Coastline. The most beautiful scenes is Ada Foah, on the Volta Estuary, an important nesting site for endangered marine turtles. The beaches flanking Elmina and Cape Coast are ideal for those who wish to combine their sunbathing with some historical sightseeing, while their less developed counterparts further west around Busua, Axim and Beyinoffe the opportunity to truly get away from it all in idyllic surrounds. And for those with limited time, there is always La or Coco Beach, lively sun-drenched expanses of white sand situated on the outskirts of

the city of Accra. A brief account of some of these sites has been described below (Ghana Tourist Board, 2008).

### **2.6.1 Kakum and the Assin Attandanso reserves**

Kakum and the Assin Attandanso reserves constitute a twin National Park and Resource Reserve. It was gazetted in 1991 and covers an area of about 350 km<sup>2</sup> of the moist evergreen forest zone. The emergent trees are exceptionally high with some reaching 65 meters. The reserve has a varied wildlife with some 40 species of larger mammals, including elephants, bongo, red river hog, seven primates and four squirrels. Bird life is also varied. About 200 species are known to occur in the reserve and include 5 hornbill species, Frazer-eagle owl, African grey and Senegal parrots. To date, over 400 species butterflies have been recorded. The Kakum National Park is about the most developed and subscribed eco-tourism site among the wildlife conservation areas (Ghana Tourist Board, 2008).

### **2.6.2 Nini Suhien National Park and Ankasa Resources Reserve**

Nini Suhien National Park and Ankasa Resources Reserve are twin Wildlife Protected Areas that are located in the wet evergreen forest area of the Western Region of Ghana. These areas are so rich in biodiversity that about 300 species of plants have been recorded in a single hectare. The areas are largely unexplored but 43 mammal species including the bongo, forest elephant, 10 primate species including the endangered Dina monkey and the West African chimpanzee have been recorded. Bird fauna is also rich. The reserves offer very good example of the west evergreen forest to the prospective tourist (ibid).

### 2.6.3 The Mole National Park

This park was established in 1958 and re-designated as National Park in 1971. It covers an area of 4,840 km<sup>2</sup> of undulating terrain with steep scarps. The vegetation is pristine Guinea savanna with gallery forests along the rivers and streams. The Park has over 90 mammal species notably elephants, buffalo, roan, kob, hartebeest, waterbuck and 4 primate species. Lion, leopard and hyena also occur and over 300 bird species have been recorded (ibid).

### 2.6.4 Boaben-Fiema Monkey Sanctuary

Boaben-Fiema Monkey Sanctuary is a community based Sanctuary located at Boaben and Fiema a twin community in the Nkoranza district of Brong Ahafo Region. The sanctuary protects the headwaters of the streams that are consumed in the locality. It has a good number of the Black and White Colobus, Mona, spot nosed monkeys and a variety of birds. The monkeys in the sanctuary are regarded as the children of the gods of the community; therefore they are neither hunted nor killed. A system of traditional taboos and their community enforcement protected the monkeys for generations. The traditional enforcement of the sanctions associated with the taboo systems however threatened the continual survival of the monkeys. The situation created the need to offer statutory legal instruments to strengthen the traditional protection of the animals. Consequently, the local people were assisted to constitute the sanctuary under district Assembly byelaws which they are being assisted by the Wildlife Department to enforce. It is the first protected area where local indigenous protection system has been given statutory back-up enforcement of traditional or indigenous protection of wildlife in the country. The sanctuary is quite accessible by road (ibid).

### **2.6.5 Tagbo and Wli Falls**

Liate Wote, home of the serene Tagbo Falls and Mt Afadjato, the highest mountain in Ghana (2950 ft above sea level) is a peaceful village nestled at the foot of the range of mountains that make up the Ghana-Togo border. Wli falls is a water fall which is 20km from Hohoe, in the Wli Natural Reserve. This waterfall is becoming very popular in the West African sub-region. It is perennial as water cascades throughout the year. It is located at the edge of the Agumatsa Wildlife Sanctuary, which has hundreds of fruit bats and a few monkeys and antelopes. The water falls from a height of about 1,600 feet (ibid).

### **2.6.6 Aburi Botanic gardens**

The Aburi Botanic Garden is located at Aburi Mountains in the Akuapem North District in the Eastern Region of Ghana. It is one of the most beautiful, peaceful and fascinating places in Ghana. Opened in March, 1890, and covering 64.8 hectares and overlooking the Accra coastal plain from an elevation of 370 to 460 meters above sea level, the Aburi Botanic Garden is a must experience for every Ghanaian as well as visitors to Ghana (ibid).

### **2.6.7 Bia National Park and Resource Reserve/Biosphere Reserve**

The Bia National Park and Bia Resource Reserve constitute a twin conservation area. It is found in the transitional zone between moist-evergreen and moist semi-deciduous forest types. It covers a total area of 305.62km<sup>2</sup> of the original National Park, which was later divided into Bia Resource Reserve covering 277.92km<sup>2</sup> of land and the other being the National Park with 77.7km<sup>2</sup> coverage. It is the only the Biosphere Reserve in the country. Sixty-two species of mammals have been recorded

as been present in this resource reserve. These include 10 primates amongst which are the Black and White Colobus, the Olive Colobus, Red Colobus monkeys and chimpanzees. The forest elephant and the highly threatened bongo are present. Over 160 species of birds have been recorded; they include the internationally endangered white-breasted guinea fowl (ibid).

#### **2.6.8 Keta Lagoon Complex**

The Keta Lagoon Complex, which has management area of 1200km<sup>2</sup> and lagoon area of 300km<sup>2</sup>, has been established as a wetland protected area (Ramsar site) with multiple-use management and significant local participation. Apart from the conservation objective of protecting thousands of migratory birds, the mangrove forest and breeding grounds of sea turtle, it has tourism potential. The Keta Lagoon with its brackish waters is the largest lagoon in Ghana. Its tiny islands provide sites of special attraction for Ornithologists, bird watchers and tourists in general (ibid).

#### **2.6.9 Shai Hills**

Shai hills is a reserve that consist of a very striking and attractive range of rocky hills set in the middle of expansive open and wooded grassland plain. The rocks are visible in many places as impressible and sleep cliffs and large and attractive rocky outcrops. The reserve is fenced to prevent animals from straying out. It consists of a prominent isolated hill ridge of hornblende gneiss surrounded by an area of Accra Plain savannah. There are beautiful scenic views across the Accra Plain from the top (ibid).

It is obvious that Ghana has vegetation and the nature reserves which can be experienced by all and sundry. The ecosystems and other natural features form the



basis of the country's nature-based tourist reserves. The country earns foreign exchange from them and other economic and social benefits. It is incumbent on the management of these areas to preserve these areas for the experience of future generations.

## **2.7 Historical Account of Tourism Development in Ghana**

The first major step in the formal development of tourism in Ghana was an evaluation of the country's tourism resources in 1970, thirteen years after independence in 1957 (Obuarn Committee, 1972). The objective was to catalogue and classify the potential tourism resources for a five- year development plan covering the period 1972-1976. As a result of this, the government issued a White Paper on Tourism, which identified investment areas for foreign participation, including various concessions and incentives for investors. Between 1972 and 1978 a number of important studies were carried out on various aspects of Ghana's tourist industry. Due to financial limitations as well as local technical constraints, most of these studies were funded and conducted by foreign agencies and personnel. Some of these studies included:

- An assessment by the United Nations Development Programme (UNDP) of tourism planning and development, and a review of human resource requirements for the tourism sector (Singh, 1978).
- Identification by the United States Agency for International Development (USAID) requirements for a comprehensive tourism development strategy (Stewart, 1973).
- A project by the United States International Executive Service Corps on the effective resource utilization for tourism development (Egan, 1975).



To supplement these studies, a number of domestically sponsored projects were carried out, focusing primarily on tourism impact assessment. These dealt with foreign exchange earnings (Ghosh and Kotey, 1973), tourism multiplier effects (Ayittey, 1975) and socio-cultural impacts (Addo 1975). Based on the studies identified above as well as others, there was a general consensus that Ghana had the potential to develop a viable tourism industry: however, there was the need to formulate a more comprehensive national tourism development plan to guide long term sustainable development. It is important to identify a number of important factors and considerations that led to this decision. In the first place, tourism was a new and technically unfamiliar industry for local planners and developers. Secondly, local technical expertise in tourism was almost not in existence. Domestic capital to support the pre-requisite general and tourism specific infrastructure was marginal. Finally, the scope for domestic and sub-regional tourism was limited by very low disposable incomes in Ghana and in the West African sub-region. As a result, it was argued that Ghana's tourism industry would most likely be dependent on foreign markets, mostly Western Europe and North America. With this, it was further argued, it could make the country susceptible to adverse economic and social impacts, which needed to be carefully assessed.

These considerations resulted in the 15-Year Tourism Development Plan that was intended to guide tourism planning for the period 1975 to 1990 with financial and technical assistance from the Danish Government (Hoff and Overgaard, 1974). Based on a projected average annual growth rate of 12.5 percent, international tourist arrivals were to increase from only 64,000 in 1975 to 357,000 a year by the end of the plan in 1990. Average length of stay was to increase from 4 to 9.4 days, while the

number of hotels with minimum international standards was to expand from only 900 in 1975 to more than 13,000 in 1990. With respect to economic benefits, 36,000 new direct and indirect jobs were to be created, while projected annual foreign exchange earnings were estimated at \$58 million. Unfortunately, this plan was never implemented due to the nature of the political economy at that time, and the subsequent decade of political instability, and severe economic deterioration that proved to be incompatible with attracting both investment capital and the projected number of international visitors (Teye, 1988). That notwithstanding, another 15-year Tourism Development Plan for the period 1996-2010 was prepared to transform the country into a major leisure destination, with financial support from the UNDP and technical assistance from the WTO (UNDP/WTO, 1995). The plan had a number of interesting and ambitious objectives, which require a brief review. First, it projects total annual international tourist arrivals to increase from only 286,000 in 1995 to as much as 1,062,000 in year 2010. The leisure or holiday segment is targeted to increase from a mere 13.3 percent in 1995 to 50.3 percent in 2010. The table below (Table 1) depicts these. Secondly, the two main components to be developed were eco-tourism, based on the country's diverse natural resource attractions, and heritage/ethnic tourism, based on cultural attractions related to the slave trade. This particular component is geared toward attracting in the Africans Diaspora particular from the United States and the Caribbean. The third objective was in relation to hotel accommodation. The scale of the plan was seen from hotel accommodation requirements in the category of two-star and above. Their provision was to cover all regions of the country and projected to increase from 3,420 beds in 1995 to 11,350 beds in 2010. The Fourth objective was from spatial and operational perspectives. The tourism plan was linked in a hierarchical structure at three different levels. At

the first level was the general national economic development plan up to year 2020, and therefore known as the Vision 2020. The second level involves ten regional tourism development plans, each derived from the national tourism plan, and at the third level were district tourism plans (WTO/UNDP, 1995). To a varying extent, majority of African countries have significant and viable tourism potential but development had been hindered by several factors including political instability. The tourism sector can never develop in a politically unstable environment due to its fickle nature. As more African countries experience political stability and institute economic reforms, tourism will play a greater role in economic diversification, particularly in the export sector with respect to foreign exchange earnings and employment generation, together with other expected economic, social and environmental benefits.

**Table 1: International Market Targets for Ghana 1995-2010**

Type of Tourist Arrivals	1995	Percent	2000	2005	2010	Percent
Business	139000	48.6	177000	237000	302000	28.4
Holiday	38000	13.3	83000	224000	534000	50.3
Total Arrival	286000	100	399000	638000	1,062,000	100

Source: WTO/UNDP (1995)

## 2.8 Parameters of Ecotourism

An integral part of ecotourism that fosters and embraces the sustainable development paradigm is interpretation and community involvement. Interpretation is an educational activity aimed at revealing meanings and relationships to people about

the places they visit and the things they see and do there (Harris *et al.*,2002). Through interpretation of the natural and cultural heritage of the destinations for visitors, it is argued that ecotourism lends itself better in fostering sustainability and environmentalism.

This comes against the widely held view in ecotourism literature that in terms of demographics, the consumers of ecotourism products are portrayed as educated and well off individuals mainly from advanced societies (Reichel and Uriely, 2008). With respect to meaningful interpretation of the ecotourism resource base (natural and cultural heritage) to the visitors, it is argued that local residents provide authenticity and value to the ecotourism experience through their intimate knowledge and sense of place of the local environment (Weaver, 2008). This will ultimately lead to the viability of ecotourism ventures as high levels of tourist satisfaction are facilitated thereby generating financial profit for the ecotourism industry in the communities.

It is noted that for the local residents employed in the ecotourism industry, the economic value of protecting their very livelihoods is compelling as the locals become important allies in the protection of both the natural and cultural environments that form the basis to the wildlife industry (Harris, 2002).

One of the key attributes of ecotourism is that it is managed in accordance with the industry's best practice to attain environmentally and socio-culturally sustainable ecotourism outcomes as well as financial viability (Weaver, 2008). In addition, the success and viability of ecotourism lies in right-sizing the operations and in generating direct financial benefits to the local residents. This is buttressed with

weaver's (2008) assertion that, no matter how environmentally and socio-culturally sustainable its apparent impact, ecotourism will survive only if it is also sustainable as a business enterprise. The feasibility of ecotourism, therefore largely depends upon financial sustainability and high levels of tourist satisfaction. This view is further supported by Reichel and Uriely (2008) who buttresses that the viability of ecotourism is attributed to high levels of tourist satisfaction and a large number of visitors to generate financial profit.

Again, in terms of attracting tourists to community based tourism projects, one parameter is political and economic stability. Spenceley (2003) argues that tourism is a very fickle industry and the occurrence or even threat of political unrest or violence in a given country usually leads to sharp decline in incoming tourists. Considering that the majority of overseas tourists to Africa come from the West, the prospects of ecotourism development are considerably dependent on Western economic and political support (Van Amerom, 2006).

Gaymans (2003) gives five parameters that describe what should be entailed in ecotourism. These are; reduced impact on environment/environmental sustainability, interaction with nature, community involvement and interaction with people, environmental activities, and economic sustainability.

The parameter 1 (reduced impact on environment and environmental sustainability) is the most important parameter when judging an ecotourism attraction must be its impact on the environment. Tourism that impacts negatively on the natural environment should not be termed ecotourism, whatever its intentions or other qualities. Having a low impact on the environment can be equated with



environmental sustainability. Low environmental impact or environmental sustainability therefore must be part of the equation, but cannot be the only criterion by which to judge whether a particular tourism product may be called ecotourism (Gaymans, 2003).

In interaction with nature (Parameter 2), it is generally accepted that ecotourism involves some form of physical activity in a natural environment. Hiking, scuba diving, cycling, or other forms of physical interaction with nature are an important element of ecotourism. By definition, interaction means impact. Increased interaction also means (the risk of) more impact (ibid).

Community involvement and **interaction** (Parameter 3) with people is also a crucial element in ecotourism. As explained by Gaymans (2003), both community involvement and, to a lesser extent, interaction with people is an aspect of ecotourism often considered essential or at least important. Community involvement in hiking and similar ecotourism activities provides a unique form of interaction between visitors and the local people. Visitors should appreciate the local people as their host by both enjoying being a guest and by not transgressing on the rules that normally apply to guests. Interaction with local people also increases the value of the tourism product. The definition of ecotourism recently adopted stipulates that part of the proceeds from a tourism attraction must be used for nature conservation (Parameter 4) in order to qualify as ecotourism. An ecotourism organization which actively tries to reverse environmental degradation should get a higher score on ecotourism (Gaymans, 2003).

The last element (Parameter 5) which elaborates on economic sustainability makes good environmental sense to ensure that environmental activities are based on a continuous flow of income. The income can be from donations, but few sponsors are prepared to subsidize organizations on a long term basis. The other option is to generate income by selling something at a profit. Primarily it means that an Ecotourism ventures must operate like a company, maximizing their profits and minimizing their costs. They must charge fairly high prices. In a Jamaican ecotourism site (Valley Hike), the charge for a regular hike is US\$10 or US\$15 for a foreigner and half that amount for Jamaicans. These are done to boost the local and national economies (Gaymans, 2003). It could therefore be inferred that financial sustainability cannot be underestimated in facilitating sustainable tourism and development. Measuring an ecotourism operation must include an evaluation of its economic sustainability. For financial viability to be guaranteed, it is critical for the destination to have attractions capable of sustaining the ecotourism sector. Also understandably, local communities have the most to lose from engaging in unsustainable activities and the most to gain from operating in a sustainable manner. The other key consideration to community involvement in ecotourism is that local residents provide authentic deep and privileged knowledge about their culture and overall tourism resource base in the destination area. Unfortunately Environmental concerns are not normally the concerns of the industry whereas environmentalists also fail to think in economic and business terms.

## **2.9 Ecotourism and Sustainable Development**

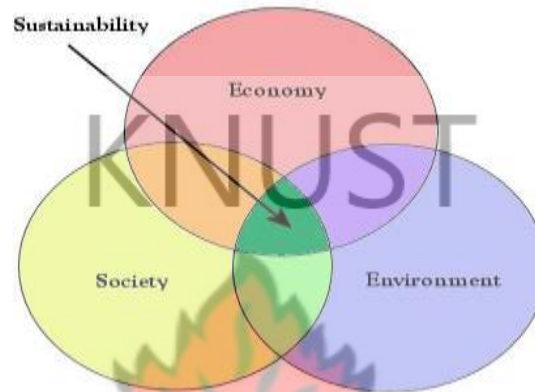
Sustainable development was brought to international attention in 1972 with the UN's Stockholm Conference on the Human Environment which focused on the need

for environmental protection. The conference led to the formation of the United Nations Environment Programme (UNEP) along with a report on sustainable development by the Brundtland Commission titled, “Our Common Future”. This report contained the often cited definition of sustainable development which is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations World Commission on Environment and Development (UNWCED), 1987). In 1980, the World Conservation Union in partnership with UNEP and the World Wide Fund for Nature (WWF) adopted the “World Conservation Strategy” with the objectives of:

- Maintaining essential ecological processes and life support systems
- Preserving genetic diversity, and
- Ensuring the sustainable utilization of species and ecosystems (United Nations, 1997).

In 1992, the Earth Summit took place in Rio de Janeiro (Brazil). The purpose of this conference was to formulate strategies, provide measures to control environmental degradation, and promote sustainable development around the world. The summit, adopted “Agenda 21”, a non-binding agreement that spelt out goals and priorities with regard to the environment and also sustainable development, and financial, legal, and institutional issues. As a result of this conference, (UNWCED), sustainable development is now a widely accepted concept and nations and organizations are putting policies into effect aimed at practicing sustainable development and protecting the environment (Abidin, 1999).

Sustainable development is mainly thought to consist of three components: environmental, economic, and social (See fig. 1). The goal of sustainability is to balance the three components at their highest capacity (The Sustainability Hub, 2008).



**Figure 1: Sustainability diagram.**

Source: The Sustainability Hub, 2008.

In relation to this, sustainability has become a notable goal in the agriculture, forestry and tourism industries. The Rainforest Alliance promotes a sustainability certification which is a comprehensive process that promotes and guarantees improvements in agriculture, forestry and travel and tourism. This independent seal of approval ensures that goods and services were produced in compliance with strict guidelines protecting the environment, wildlife, workers and local communities (The Rainforest Alliance (RA), 2008).

## **2.10 Ecotourism and Environmental Sustainability**

Mathiesen and Wall (1982), refer to environmental factors as natural environment such as natural features and the ecological processes occurring in an area. Natural features, including scenic vistas and landscapes, climate, topography, wildlife and

vegetation are important to the type and level of tourism in an area. They further explain that tourism can be important to natural resource conservation because part of the income from tourism can be re-invested into maintaining natural areas (Mathieson and Wall, 1982). In this sense, tourism has enabled rehabilitation of old and creation of new sites, and has fostered administrative and planning controls such as restricted access to sensitive areas that maintain the quality of the environment (ibid).

The most proclaimed positive issue is ecotourism's contribution to sustainable resource management through conservation of the natural resources on a direct or indirect basis (Commonwealth of Australia, 1993, 1995; Cater, 1993, 1994; Dearden, 1995).

The issue of ecotourism and environmental sustainability is linked to the emergence of 'new tourism' and associated production practices and consumption patterns (Poon, 1993). Although contested, it is suggested that ecotourism is based around sustainable ideas (such as environmental stewardship, inter-generational and intra-generational equity). Certainly, we are told that ecotourism is small in scale, non-consumptive, ethical/responsible, and of benefit to local people. It is also thought to encourage pro-environmental behaviors when accompanied by interpretation (Shaw and Williams, 2004).

According to Wilson and Garrod (2003, 2004) those who initiate and develop ecotourism operate within the capacity of the environment to absorb the impacts. However, in the absence of an appropriate management regime, ecotourism is unlikely to be sustainable ecologically by any relevant measure. In a related



development, Eagles explains that the goals of ecotourism management strategies are to protect the environment and to provide the tourist with a great ecotourism experience. Ecotourists are motivated by ideas of wilderness, wildlife, parks, learning, nature and physical activity and these ideas should underlie the management of ecotourism (Eagles, 1997). Moreover, ecotourism should be managed toward a more active form so that activities contribute to the health and viability of the environment where they take place (Orams, 1995).

There is also the possibility that ecotourists (however well intentioned) might disturb the feeding and breeding patterns of wildlife, transmit diseases and modify habitats, just by being present in environmentally sensitive areas. In addition, a great many tourism products labeled with the prefix 'eco-' have few, if any, of the above characteristics, which suggests that ecotourism is being used primarily to meet economic objectives by promoting the quality of the environment to attract international tourists (Holden 2005:130). He however gives a contradictory submission that, most ecotourism destinations are geographically remote in relation to the markets they serve. There is the issue of carbon expenditures associated with long-distance travel and their contribution to climate change. Clearly, then, ecotourism is not (and can never be) synonymous with environmental sustainability, contrary to what some advocates would have us believe (ibid).

It is evident from Ceballos-Lascurain's definition of ecotourism that activities which ecotourists participate in can only exist in well-preserved or protected areas. Here, it was claimed that ecotourism's association with protected areas is valid as it enhances the conservation element (Norris, 1992; Warner, 1991; Wall, 1994:5). Figgis (1993)

emphasizes that ecotourism does not ignore the indigenous people who often inhabit such natural settings, who are both part of the environment and their culture enhances the visitors' interests.

In many cases, and despite good intentions and attempts to reduce negative effects on the natural environment, tourism has been detrimental to the environment. Damaged vegetation, disruption to wildlife, soil compaction, water quality problems, air and noise pollution, are but a few of the negative environmental effects caused by tourism (Mathieson and Wall, 1982). Additionally, protected areas (e.g., national and state parks) have undergone the cumulative and interactive effects of many small-scale, independent, low-intensity tourism developments over the decades (Nelson, 1994). Increasing the number of ecotourism activities can pose environmental problems because, despite being non-consumptive and low-impact, people engaging in ecotourism consume resources and generate waste (Office of Technology Assessment, 1993).

Sustainable ecotourism cannot be achieved without adopting a holistic approach in which all partners in the ecotourism system should work in a complimentary manner. Ideally, once ecotourists continue to enjoy serene natural environs, it is plausible that they might compromise the original form of the environment. Environmental Sustainability has a major stake in this write-up since it is a very crucial phenomenon in the environmental science fraternity. It is therefore important to discuss environmental sustainability itself in all facets of life so far as we continue to live within the four corners of nature.

## 2.11 Ecotourism and Community Involvement

Community based ecotourism is a growing phenomenon throughout the developing world. The CBE implies that the community has a substantial control and involvement in the ecotourism project, and that majority of the benefits remain in the community. The three main types of CBE have been identified. The purest model suggests that the community owns and manages the enterprise. All community members are employed using rotation system, and profits are allocated to community projects. The second type of CBE involves the family or group initiatives within communities. The third is joint venture between a community or family and outside business partner (Wesche and Drumm, 1999).

One fundamental attribute of ecotourism is local community involvement. According to the Quebec Declaration on Ecotourism cited in Weaver (2008), ecotourism is tourism which includes local and indigenous communities in its planning, development and operation and contributes to their well-being. The idea of meaningful community involvement is largely understood as an integral component of sustaining the tourism sector through conservation of the natural environment and generating economic benefits to the local people.

To support the argument, as already reiterated by Harris *et al.*, (2002), an integral part of ecotourism that fosters and embraces the sustainable development paradigm is interpretation and community involvement. With respect to meaningful interpretation of the ecotourism resource base (natural and cultural heritage) to the visitors, it is argued that local residents provide authenticity and value to the

ecotourism experience through their intimate knowledge and sense of place of the local environment (Weaver, 2008).

Ecotourism may often be identified as a means by which communities can raise their standard of living without unsustainable exploitation of natural resources or cultural degradation. Indigenous communities have very special opportunities to develop ecotourism, because they often live in remote natural areas. However, most indigenous people have been marginalized by their national governments. The relationship between indigenous communities and tourism has long been tenuous. Ecotourism businesses have frequently used local resources with little economic benefit to the community (Sutton, 1999).

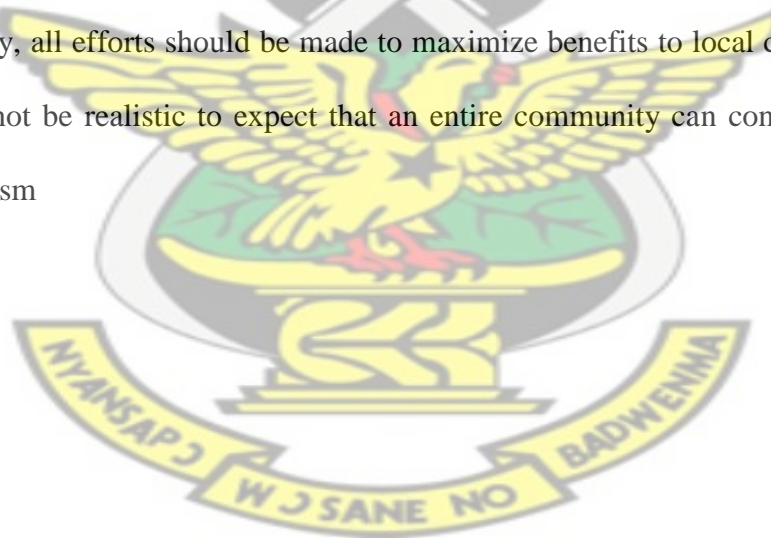
Arguably, community based approaches to tourism development has been advanced as a prerequisite to sustainability. Admittedly, ecotourism has been subject to shifting representations of meaning and the absence of general theoretical and practical consensus (Fennel and Nowaczek, 2010). It has been noted that developing an ecotourism enterprise is a complex and difficult undertaking often involving a thorough understanding of market principles and business fundamentals involving building strong, lasting and equitable partnerships with local communities (Parker and Khare, 2005).

Literature is replete with the fact that the sustainability criterion of ecotourism includes economic and sociocultural dimensions further to the ecological dimension. Notable is the emphasis that the tourism industry can only be sustainable if local communities derive revenue through tourism. Weaver (2008) makes reference to

Northern Tanzania, where a case study of three villages revealed that support of wildlife conservation is directly related to the benefits that village residents obtain from ecotourism. This is strengthened by The White Paper of Development and Promotion of Tourism in South Africa states that the attractiveness of the region is based on relatively accessible wildlife, beautiful scenery, unspoiled nature, diverse traditional and township cultures and pleasant climate (Government of South Africa, 1996).

## KNUST

From the above discussed, it is obvious that the community cannot be excluded if ecotourism is to be successful. However, do the operators of the enterprise take much delight in involving the community in all facets of their operations? Even if local people were involved in ecotourism, it would be a labor of 'cheap' commodity. Certainly, all efforts should be made to maximize benefits to local communities, but it may not be realistic to expect that an entire community can control and manage ecotourism





## CHAPTER THREE

### MATERIALS AND METHODS

#### 3.1 Scope and Area of Study

The scope of a study is about the range of issues captured in the context of the study. The study sought to find out the landscape and natural resources at the Bia Biosphere. Also, the extent to which those resources are suitable for ecotourism was captured. The attitude of the people towards sustainable development of those features was also within the issues captured.

The areas of the study were ten sampled communities that surround the Bia conservational area in the Bia District in the Western region of Ghana. Those communities were selected based on their closeness to the reserve. The idea is that the activities of those selected communities have direct impact on the reserve. These communities are Kunkumso, Adjofua, Osonokrom, Obey Krom, Adjeikrom, Benkasa, Abosi, Abrewakrom Aboboyaa, Ahwiafutu.

The Bia Biosphere Reserve is bounded within the geographical coordinates 6°32' N to 6°37' N and 3°02' W to 3°08' W. It is located within the northwestern part of the Western Region of Ghana. It is also located very close to the Ghana – Cote d' Ivoire border, and covers a total area of 355.62 km<sup>2</sup>. The reserve comprises of two blocks of forest, i.e., the Bia National Park (177.7 km<sup>2</sup>) and the Bia Resource Reserve (277.92 km<sup>2</sup>). The Bia National Park lies within the Moist Semi-deciduous Vegetation Zone of the country whereas the Bia Resource reserve is within the Moist Evergreen Vegetation Zone (Hall and Swaine, 1981). There are four adjacent blocks of forest reserves, namely the Sukusuku, Tawya, Krokosua Hills and Bia north forest reserves, that potentially serve as buffer zones under the biosphere reserve concept.

The Bia Resource Reserve has been exploited for timber in recent past whereas this activity has never been carried out in the Bia National Park. The area is a forest island surrounded by farmlands of cocoa, and a feeder road network that links the surrounding villages (some of which are only seasonally inhabited). The major occupation in the area is farming with cocoa cultivation as the major activity. The area experiences a bimodal annual rainfall pattern with two seasonal peaks that occur in June and September.

KNUST

### 3.2 Sampling

The study employed the use of random sampling and purposive sampling in collecting data from respondents. The simple random sampling was used to give the community members/general public equal chance of being selected. On the other hand, purposive sampling was considered with respect to the opinion leaders and the wildlife staff. This is because, these people (opinion leaders and the wildlife staff) had specific knowledge for the purpose of the study, and hence they were voluntarily picked for the study.

Primary and secondary data were gathered for the study. The methods of collecting secondary published data included reviewing, books, journals, articles, newspapers, etc. which were related to the study. Unpublished secondary data were collected electronically, mostly from the internet. With the primary data, the research was carried out in two folds. Those were field survey and questionnaire and informal interviews. The field survey was the major source of primary information. It involved a thorough tour in the reserve. The reserve was traversed beginning from the National Park through Chimps camp trail and back to Kunkumso (that is the Park

headquarters) through Apaaso trail. The field survey was conducted to determine the following;

- a. Whether there were one or more strict nature reserves from which the public is excluded.
- b. Extensive wilderness areas within which there are no development and which are accessible to the public only by primitive means of transport.
- c. Areas set aside for mass tourism which the general public can reach by public transport or which are close to roads and easily accessible by linking.
- d. Identification of a wide range of landscapes of unexcelled beauty as well as of great scientific interest.

With respect to the interviews, it involved interaction and interviews (formally & informally) with the Wildlife Official-in Charge, and then the staff in the Wildlife Protection Camps of the Bia Biosphere Reserve (BBR).

This was then followed by interaction and interviews with the traditional authorities and individual farmers in some of the communities around the reserve. This was done with the guidance and assistance of a staff of the Wildlife Department.

A total of ten village communities, together with the staff of 20 of the Wildlife Department's Protection camps around the BBR were both formally and informally interviewed. The formal interview involved the use of well-structured open ended questionnaire which were designed and administered to respondents. The informal interviews entailed more of courtesy calls on opinion leaders and conversation with individuals and households. A total of 300 persons were formally interviewed.



**Figure 2: Map of the study area.**

Source: Energy Commission

**Table 2: Response of Selected Communities.**

Community	Respondents
Kumkumso	25
Adjofua	35
Obeykrom	15
Adjeikron	10
Benkasa	20
Abosi	25
Abrewakrom	10
Aboboyaa	10
Ahwiafutu	15
Total	280

Source: Field Survey, 2012



### 3.3 Data Analysis

Data collected from respondents were analyzed using The Statistical Package for Social Sciences (SPSS). In presenting and analyzing the data, simple statistical tools were used. That is, the data was converted into frequency tables, percentages, and charts.

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## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.1 Introduction**

The ecotourism industry is regarded as one of the fastest growing industries and gained its roots in the environmental movement of the 1960s, eco-development in the 1970s and sustainable development in the 1980s. Nature-based tourism and ecotourism are some of the clearest examples of how tourism benefits from biodiversity conservation- but the role of tourism as an economic justification for the creation of national parks and nature reserves has also been long recognized (Hall, 2010 cited in Eshun, 2010). This chapter of the study deals with a thorough analysis, discussion and interpretation of the field data. The chapter evaluates the natural resource base at the Bia reserves which help promote ecotourism. It also unravels the general suitability of the natural resources in the Bia biosphere reserve for ecotourism. It thoroughly discusses the factors that promote/limit ecotourism development in the area. The section further presents the people's perception and understanding towards sustainability and conservation of natural resources for ecotourism in the area. The researcher expects that, the response generated would either match that of the literature review concerning the objectives of the study or come out with a different line of knowledge.

#### **4.2 Sex and Age Group of Respondents**

The sex distribution for the general public selected indicates that, majority (95) representing 52.8% are females while the remaining 85 representing 47.2% are males. With respect to the opinion leaders selected indicate that ten communities, 70% were males while the remaining the 30% were females. The table below

presents the age group of the general public sampled during the survey. From the table, it is clear that majority of the general public were within the age group of 31-40 years. Out of the total sample of 180 for the general public, 65 representing 36.1% were within the age group of 31-40years. Those within the age group of 20-30 years scored 29.4%, followed by 31 respondents representing 17.2%. 17 respondents had their ages less than 20; whereas 14 respondents were 50 years and above, thus 7.9%.

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**Table 3: Age Group of the General Public**

Age Group	Frequency	Percentage
less than 20	17	9.4
20 - 30	53	29.4
31 - 40	65	36.1
41 - 50	31	17.2
50 and above	14	7.9
Total	180	100

Source: Field Survey, 2012

#### **4.3 Identification of Sites of Aesthetic and Natural Beauty**

The study identified the sacred grove (Apaaso) and the elephant pool as sites of aesthetic and natural beauty. Both Apaaso and elephant pool are located in the National Park. Currently Apaaso is the site that is assessable to the general public and it is used as major tourist site in Bia Conservation area.

#### 4.4 Field Survey

The field survey shows that the study site has sites of natural beauty which could be used for ecotourism.

##### 4.4.1 Natural resources in the Biosphere reserve

The natural resources which could be of interest for tourism were classified as Hills, Sacred grove, Vegetation, Plunge pool and Rock outcrop. To this effect, some natural resources were found to be dominating in the reserve. This is depicted in the table below.

**Table 4: The occurrence of Natural resources of scenic beauty in the Biosphere reserve**

Natural resources	Frequency	Percentage
Hills	2	2
Sacred grove	8	8
Vegetation	71	71
Plunge Pool	15	15
Rocky outcrop	4	4
Total	100	100

Source: Field survey, 2012

From the table above, it is obvious that the entire reserve is rich in vegetation cover since 86% of the opinion leaders indicated that the main natural resource is the vegetation cover. Information gathered through observation further showed that swampy areas are more common in the forest. Also, plunge pool (elephant pool) is one of the natural resources in the National Park. It is a small, deep swimming pool

which is designated to the usage of the animal species in the National Park during the dry season especially the elephants. This accounted for 15% of responses. Another important natural resource found in the reserve is the sacred grove (Apaaso) which accounted for 8% of the responses from the opinion leaders. This is a grove of trees and some rocks of special religious importance to a particular culture. The sacred groves in the National park serve as an important feature of mythological landscape and cult practice. This suggests that the inhabitants have some belief in the supernatural.

Rocky outcrop and hills accounted for 4% and 2% of the natural resources present in the reserve. It was discovered through observation that the rock outcrop is the part of the rock formation that has appeared above the surface of the surrounding land. This represents a potentially useful feature for ecotourism development. From the field survey it was observed that, there was a designated area in the National Park (that is Apaaso which is sacred grove) which the general public (tourist) have access to by public transport. Although these resources (hill, rock outcrop and sacred grove) were found in the reserve, they are in few locations.

The plate (plate 1) below shows one of the plunge pools found in the reserve during the survey. The pool is normally sourced from the water table beneath the earth surface and rainwater.





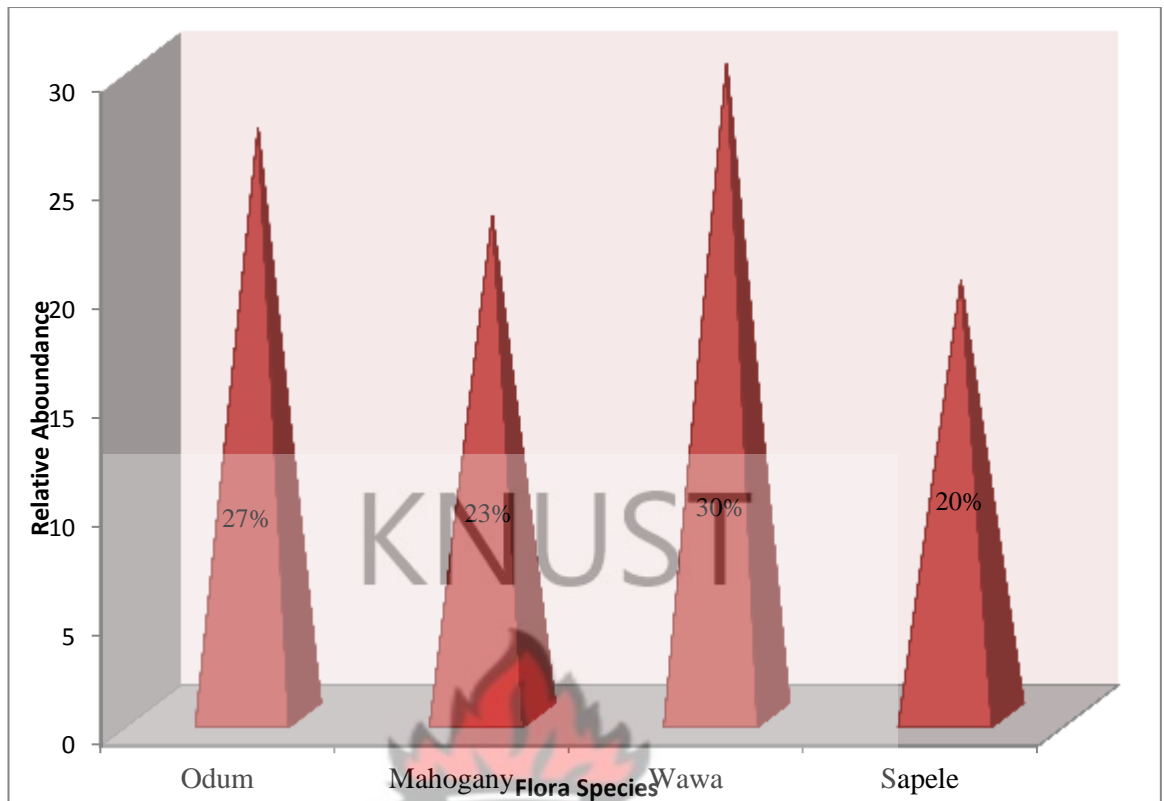
**Plate 1: A Plunge Pool that Animals depend on for Survival in the Reserve.**

Source: Field Survey, 2012

#### **4.4.1.1 Fauna and Flora Species at the Bia Biosphere Reserve**

Fauna and flora were also important natural resources that were found in the Bia Biosphere reserve. Information gathered regarding the species of trees found in the reserve is presented in figure 2. Twenty seven per cent of the responses indicated that Odum (*chlorophoraexcelsa*) is one of the dominant tree species in the reserve. Also about 23% made mention of Mahogany (*khayaanthotheca*). While 30% and 20% of the responses were for Wawa (*triplochitonscleroxylon*) and Sapele (*entandrophragmacylindricum*) respectively.





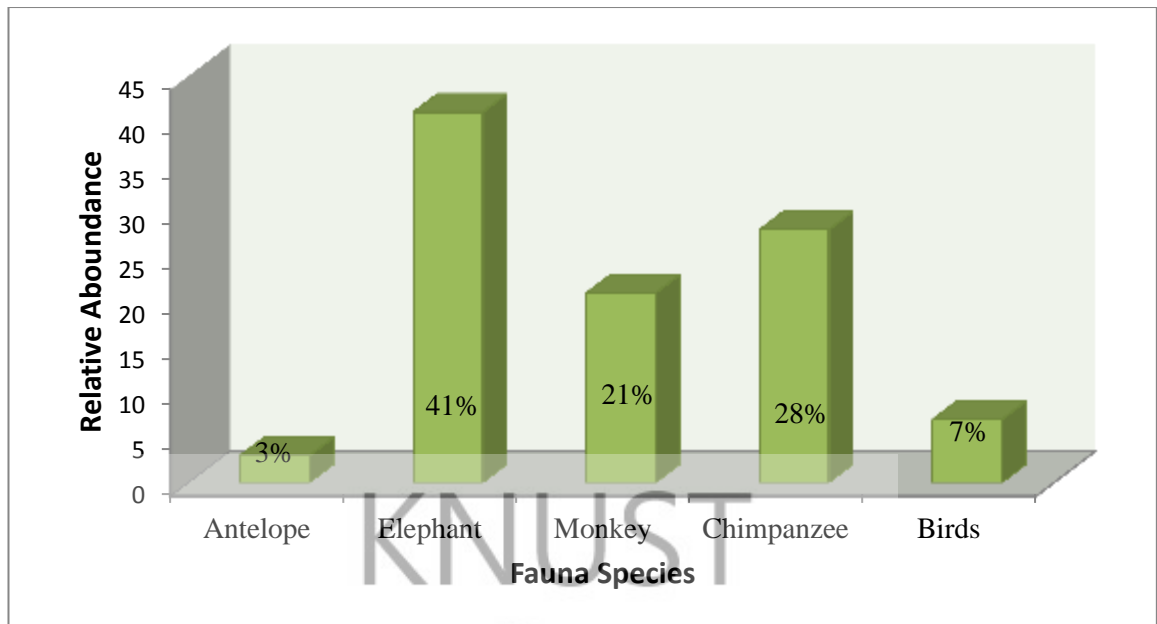
**Figure 3: Community Perception of the Relative Abundance of Tree Species in the Study Area.**

Source: Field survey, 2012

It is evident that all the four tree species were more dominant than the other tree species in the reserve. Even though the values were not the same, the differences were not of much significance to conclude that among the four, one type of tree dominated. The dominant tree species identified by the Wildlife staff confirms what the opinion leaders indicated. However there were other tree species found in the biosphere reserve. These were Ofram (*terminaliasuperba*), Emile, Odumah, Utile, Wawabre, Kyemkyem, Danwoma, and Abako. The wildlife staff indicated that the reserve provides an optimum condition for biomass production due to the copious rainfall coupled with the fertile ochrosol soil. This has resulted in some of the tallest trees in West Africa. The Bia reserve undoubtedly contains the largest and most

impressive trees in Ghana for ecotourism development whose canopy reaches about 60m in height.

The species of animals found in the biosphere reserve are complex and diverse in nature. However, it was found out that certain animal species dominate in the reserve. The most dominant animal species found in the reserve according to the opinion leaders is presented in the figure below. From the figure, elephant dominated the reserve with a percentage score of 41%. Chimpanzees were also found in the reserve since 28% responded to that. Monkeys and birds are also amongst the species of animals found. They scored 21% and 7% of the responses. A smaller number of three (3) opted for antelopes. According to the wildlife staff, the Elephant species in the reserve include *Loxodonta Africana Cyclotis*. There are also other animals such as Bongo *Tragelaphus Eurycerus*, Leopard, *Panthera Pardus* and Yellow-barked Duiker *Cephalophus*. Birds found in the reserve consist of a list of 231 species with which majority of them are truly forest dependents. The list contains several birds endemic to the upper real Guinea Forest. Examples of the birds include white breasted guinea fowls, yellow throated olive, rufous wind illadopsis. There is also a recent unconfirmed report of wattled cuckoo shrike species in the reserve. Other species of conservation importance according to the wildlife staff are four specie of large casqued hornbills. A report from the staff indicates that the Bia Bird Fauna is one of the richest in Ghana and has recently been accorded as an internationally important bird area.



**Figure 4: Community Perception of the Relative Abundance of animal Species in the Study Area**

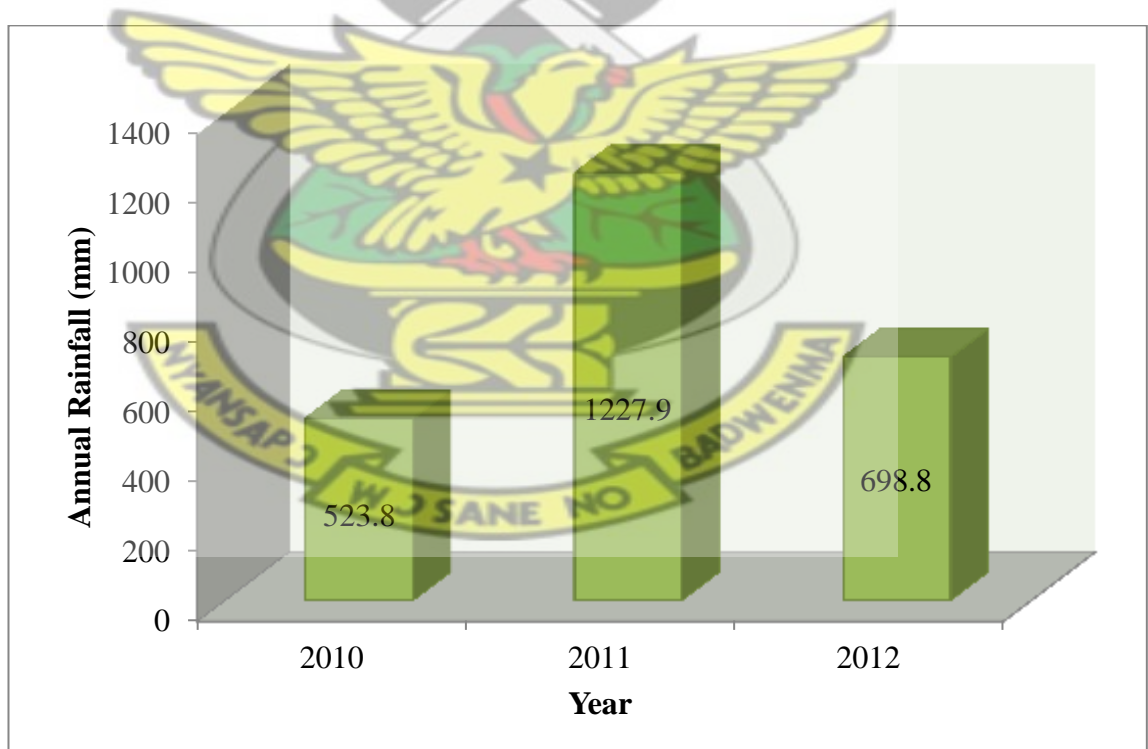
Source: Field survey, 2012

Land is also an important natural resource in every community this is because almost every economic activity such as farming, industrial and ecotourism development is land dependent. The study also sought to identify the nature of the land of the Bia Biosphere reserve. Information gathered through observation and interrogations indicated that the landscape of the conservation area is basically undulating and flat and has lots of natural vegetation and plants. It was discovered that there are no major mountains and hilly areas in the Bia Conservation area.

#### **4.4.1.2 Rainfall Pattern and its Suitability for Ecotourism in the Area**

Rainfall pattern in every area is very significant phenomena that can affect any activities. In an ecotourism area, the pattern of the rains can determine how suitable the vegetation could be for such a purpose. As imperative as it was, there was the

need to analyse the trend of precipitation in the Bia District so as to determine whether the pattern is a suitable one for ecotourism development in the area. Information on the annual rainfall recorded in the Bia Conservational area for the past three years is recorded in the figure above. It must be emphasized that the Bia conservational area lies within the forest belt and wet equatorial climatic region of Ghana with average monthly rainfall of about 1200mm. Thus, the region receives the highest annual amount of rainfall in Ghana. In the figure below (Fig. 4) indicates the amount of rainfall for the last three years has been significantly high. For instance in the 2011, a total amount of 1227.9mm of rain was recorded at the Bia conservational area, followed by almost 699mm of rainfall recorded in 2012 (that is from January to July 2012).



**Figure 5:** Annual Amount of Rainfall recorded in Bia area in the last three years (mm)

Source: Field survey, 2012

## 4.5 Questionnaire Survey

### 4.5.1 Demographic Characteristics

This section presents a bio-data of the general public and opinion leaders from the ten communities. A total sample of 300 respondents was selected using both probability (simple random) and non-probability (purposive) sampling techniques. Out the total sample, 180 constituted the general public, 100 opinion leaders and the remaining 20 for wildlife staff. With the opinion leaders, majority of them fell within 51-60 years, thus 34% of them. Those within 31- 40 and 41-50 years were 21% and 25% respectively. That is in all, most of them fell within the age group of 41 to 60 depicting the fact that the elderly normally qualify to be opinion leaders in the Ghanaian traditional setup. It is believed that they have stayed long and/or had enough experiences on certain traditions since they were transformed from their forefathers to them. These are shown in the table (table 4) below.

**Table 5: Age Group of the respondent in the questionnaire survey**

Age Group	Frequency	Percentage
Less than 30	5	5
31- 40	21	21
41 - 50	25	25
51 - 60	34	34
61 and above	15	15
Total	100	100

Source: Field survey, 2012



#### 4.5.1.2 Educational Background of Respondents

Formal education is a major role player in a person's development. Information on the educational background of the respondents (opinion leaders and general public) is presented in the table below (table 5).

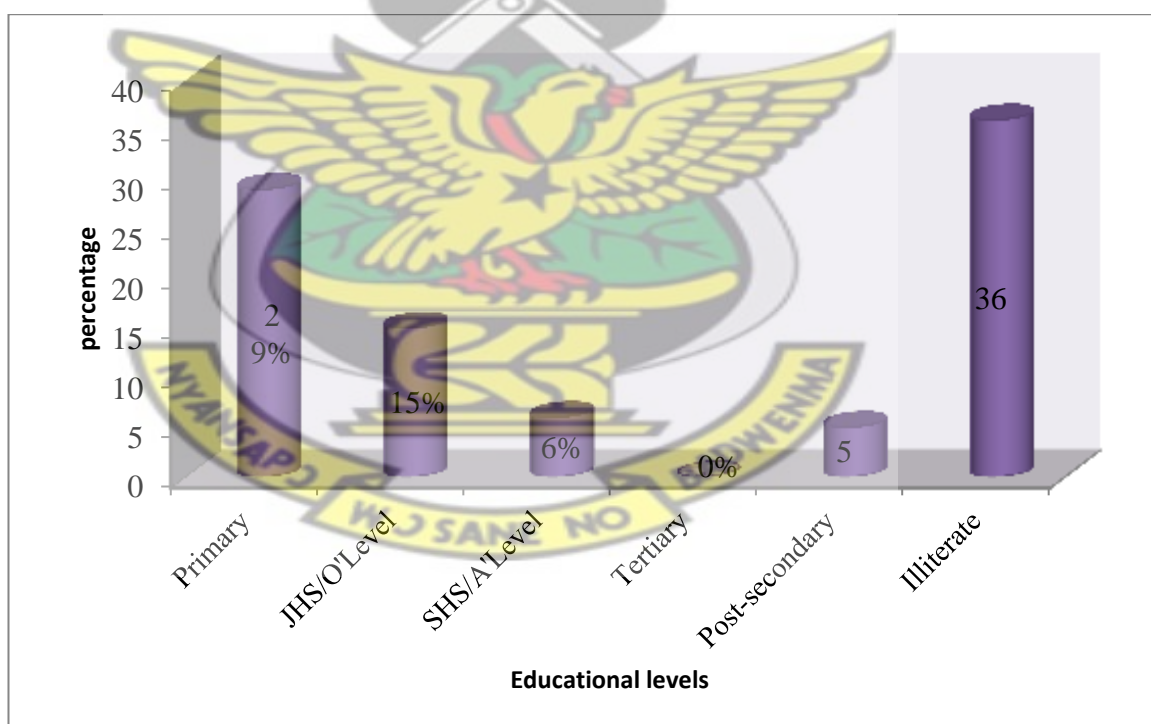
The educational attainment was from primary school to tertiary. However, some were illiterates. 29 respondents had their highest educational level up to the primary, Junior High recorded 18 respondents, Senior High School/A' level also had 12 respondents and tertiary education with no respondent. That is, none of the opinion leaders had tertiary education for the opinion leaders. Meanwhile, 36 opinion leaders were illiterates. As reflective as it is, it enunciates the fact that our forefathers and great-grandfathers had little interest in education and that has affected these opinion leaders, hence, the low level of education to the extent of some not attending school at all.

The picture was quite different from that of the general public. 53, 19 and 26 were primary, JHS and SHS/A' Level leavers respectively with corresponding percentages of 29.4, 10.6 and 14.4. Those who had attained tertiary education were 3 while those with post-secondary education were 36 with 1.7% and 17% accordingly. 48 of the general public were illiterates, thus 26.7% of them (general public). The educational level in the area can be seen as inauspicious since most of the respondents from both categories had not had formal education. Though some had attained above SHS, their number was nothing to write home about. It is however worthy of note that, the educational level of respondents was not an impediment in the data collection process or the study since most of them had stayed in the area for far too long to give a detailed account of the situation at hand.

**Table 6: Educational Level of Respondents**

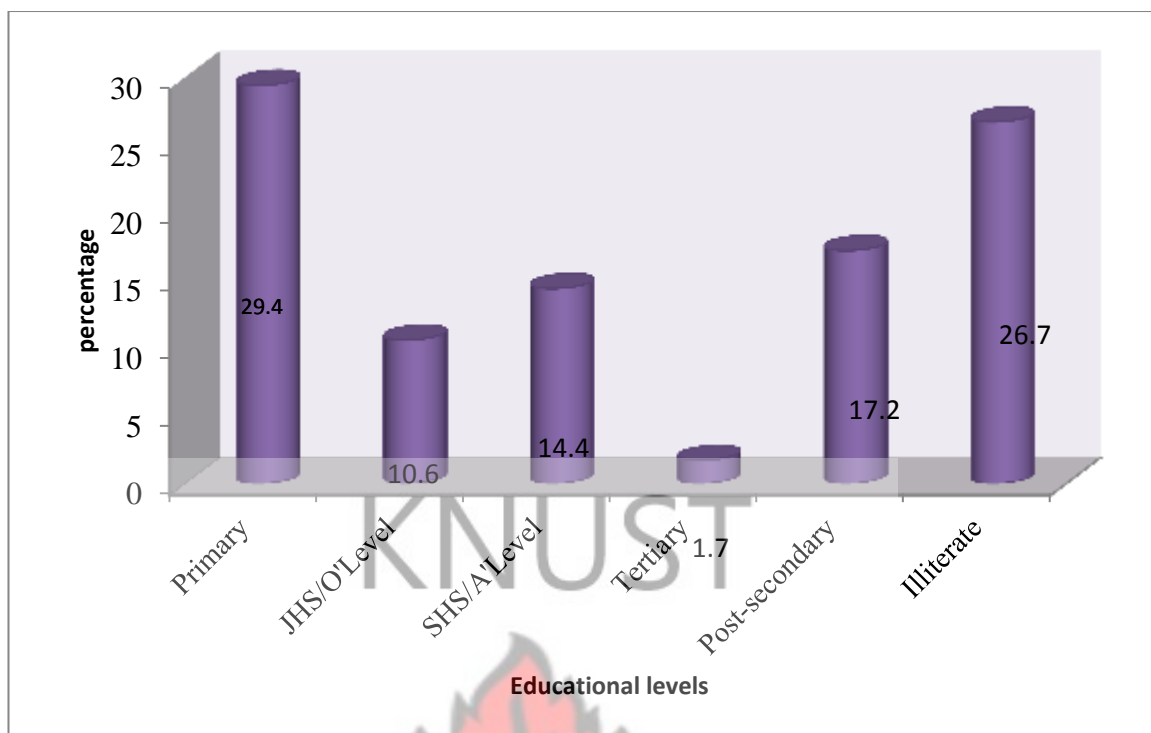
Educational Levels	Opinion Leaders		General Public	
	Frequency	Percentage	Frequency	Percentage
Primary	29	29	53	29.4
JHS/O' Level	18	18	19	10.6
SHS/A' Level	12	12	26	14.4
Tertiary	0	0	3	1.7
Post-secondary	5	5	31	17.2
Illiterate	36	36	48	26.7
Total	100	100	180	100

Source: Field Survey, 2012.



**Figure 6: Educational Level of Opinion leaders.**

Source: Field survey, 2012.



**Figure 7: Educational Level of General Public**

Source: Field survey, 2012.

#### **4.5.1.3 Period of stay in the Community**

The period respondents had stayed in the area was obtained from the questionnaire data as indicated in (table 6).

That majority of the respondents had stayed in their areas since birth since 73 and 91 opinion leaders and general public respectively responded to this option. That is, 73% and 50.6% respectively. It is not surprising in the case of the opinion leaders since it is traditionally wise to have had long period of stay in a community to be able to ascertain societal happenings once they come about so as to be able to pronounce judgement. Also 21 and 6 opinion leaders had stayed in their respective areas for more than five years and between two to five years respectively. None of them (opinion leaders) had stayed in their areas for a year and below. Similar trend was noticed in the response of the general public. 52 and 17 of the general public had

stayed in their respective areas for more than five years and between two to five years respectively with 28.9% and 9.4% for each. Following this was 8 (4.4%) and 12 (6.7%) respondents (general public) who had stayed in the area for a year and less than a year respectively.

It can be deduced that, there could be more authenticity and genuity in the information given since most of them had stayed in their areas for more than five years and were the appropriate people to give reliable information for the purpose of the study. They could give a broader and in-depth picture of the situation necessary for analysis and discussion. This is because an insignificant number of respondents for both categories had stayed in their respective areas for a year and below and that their number couldn't compromise the information given by those with long stay. This however does not debunk their responses since they also gave certain relevant information necessary for analysis and discussions.

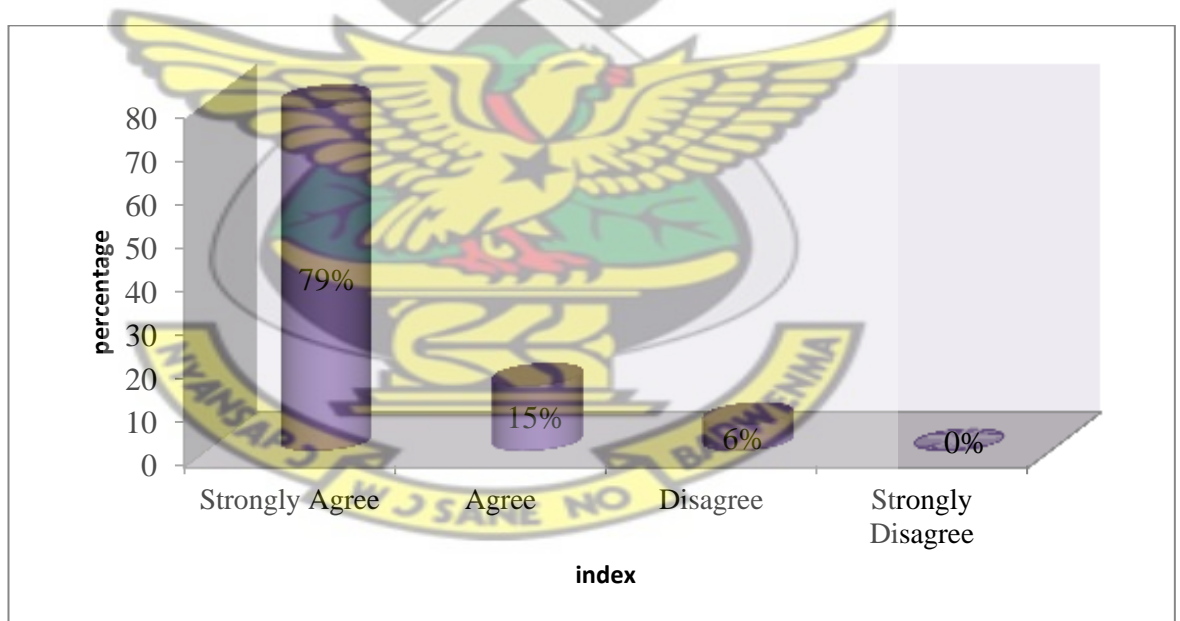
**Table 7: Period of stay in respective communities**

Time	OPINION LEADERS		QUESTIONNAIRE OF RESPONDENT	
	Frequency	Percentage	Frequency	Percentage
All my Life	73	73	91	50.6
More than 5 years	21	21	52	28.9
2-5 years	6	6	17	9.4
1 year	0	0	8	4.4
Less than a year	0	0	12	6.7
Total	100	100	180	100

Source: Field Survey, 2012.

#### 4.5.2 Extent of Agreement of Fauna and Flora suitability for Ecotourism in the Biosphere

This section looks at the opinion leaders' perceptions regarding the extent of agreement of the suitability of fauna and flora species in the biosphere. There are diverse fauna and flora species found in the Bia biosphere reserve. Results on the extent of agreement of the suitability of fauna and flora species are presented in figures 7 and 8. The options were in two indexes, 'agree' and 'disagree'. The agree option meant the respondents accepted the fact that the flora species are suitable for ecotourism whereas disagree meant that respondents do not accept the fact that the flora species are suitable for ecotourism. The figure below shows the response on flora species



**Figure 8: Suitability of Flora Species for Ecotourism.**

Source: Field survey, 2012.

Responses on the extent of agreement of the suitability of flora species displayed in figure 7 above indicates that, 79% of the respondents strongly agreed to the fact that,



the flora species are appropriate for ecotourism. Also about 15% agreed to the same fact whereas the remaining 6% disagreed. This indicates that indeed the flora species are suitable for ecotourism in the area. The Flora species are composed of diverse tree species which really portray the scenery of an ecotourism site. With respect to the extent of agreement on the suitability of the fauna species of the area for ecotourism development, the study revealed that about 64% strongly agreed to the assertion that the fauna species presents an excellent resource for ecotourism. However about 15% disagreed to the fact that the animals in the area were suitable for ecotourism. Even though the responses for the strongly disagreed is not large enough, it was important to probe further to ascertain why this occurred. Also about 9% and 12% agreed and strongly disagreed respectively to the fact that the fauna species are suitable for ecotourism. The responses are shown the figure below (fig. 8).



**Figure 9: Suitability of Fauna for Ecotourism.**

Source: Field Survey, 2012.

It was further discovered that nearly all the species believed to have been present in pre-historic times have moved away from the reserve even though unconfirmed

reports from hunters suggest that some still exist. Although some species have not been observed for years, this is suspected to reflect the behavioral changes, resulting from high hunting pressure.

#### **4.5.3 Natural Resources at Bia Biosphere Reserve**

A resource could be seen as anything that we use from our environment to achieve an aim. It could either be natural or artificial. All that nature has provided such as soil, air, water, minerals, coal, sunshine (sunlight), animals and plants, etc., are known as natural resources. As humans we are bound to use these resources directly or indirectly. Natural resources are used as raw materials to manufacture or create a range of modern conveniences. That is, the manufacturing industry cannot stand the test of time without natural resource. Also show that there were people travel all over the world to experience the nature of a place through tourism. With this, natural resources are very essential icons for ecotourism development. This section of the results look at the natural resources and features present at the Bia biosphere reserves. It looks at the water (rivers), plants, temperature (rainfall pattern to be precise) and the wildlife as important ecological features in ecotourism development in the study area.

##### **4.5.3.1 Knowledge about Natural Resources in the Area**

Most ecotourism sites in the world have natural resources and other important features that serve the purpose of ecotourism promotion and development. The researcher therefore wanted to find out whether the people in the area were even aware of natural resources in the Bia biosphere. The study revealed high level of awareness about natural resources present in the Bia biosphere reserve. Information

from the 100 opinion leaders indicated that all of them were aware that the Bia biosphere reserve has certain natural resources that could promote ecotourism in the area. This is evident in table 7 presented below.

**Table 8: Knowledge about Natural Resources in the Biosphere Reserve**

Options	Frequency	Percent
Yes	100	100
No	0	0
Total	100	100

Source: Field survey, 2012

Information gathered from the wildlife staff also shows that there are natural resources in the Biosphere reserve. It can therefore be deduced that the biosphere reserve has certain natural resources that can promote ecotourism in the area.

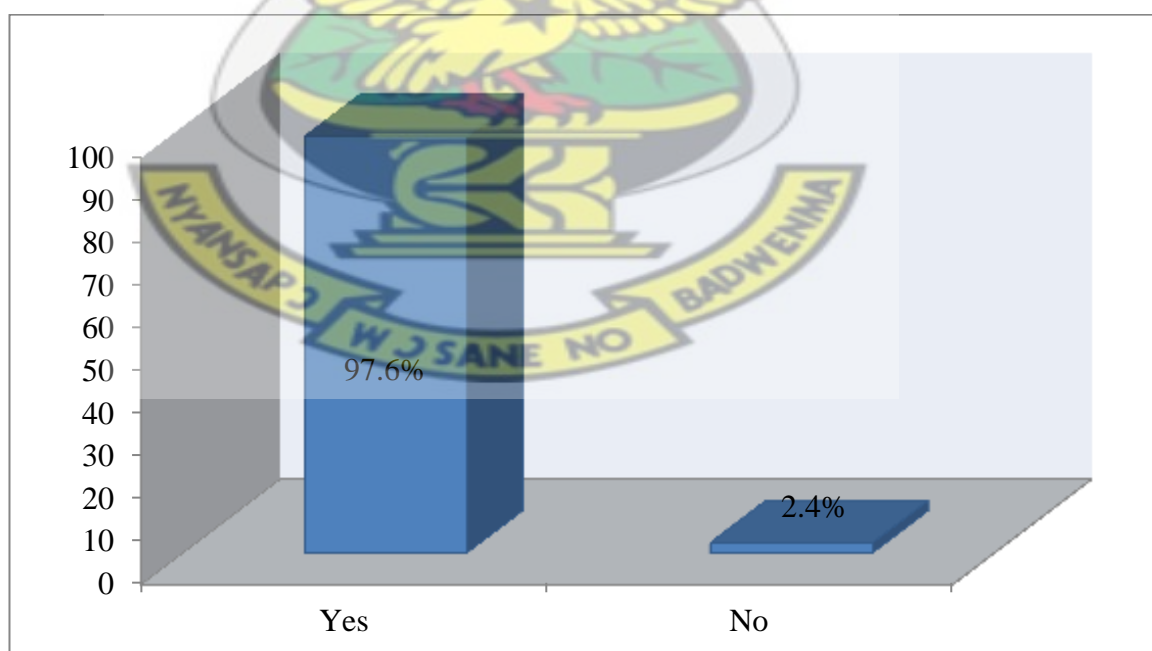
#### **4.5.3.2 Perception on how Ecotourism Can Sustainably Developed the Area**

It is asserted that ecotourism is often proposed as being able to ensure environmental conservation while enabling economic benefits to accrue to the local communities (Cater, 2006). Certain key attributes are embedded in ecotourism. They include attractions being predominantly nature-based, visitor interactions being focused on learning or education, and finally, experience and product management follows principles and practices associated with ecological, socio-cultural and economic sustainability. This suggests that the understanding of ecotourism moves beyond just travelling to see the attractions of a place. Even though the economic benefits cannot be underestimated, the issue of conservation of the natural and other resources found in the designated area is paramount.

This section presents the general public perceptions and attitude towards sustainability of resources for ecotourism in the Bia Biosphere reserve. The results are based on self-reported cases from a cross section of the inhabitants of the Bia district.

#### 4.5.4 Perception on the Support for the Creation of the Reserve

The study revealed that a higher percentage of the respondents (97.6%) of the area are in supported of the creation and improvement of the Bia Biosphere reserve. They indicated that the creation of the reserve had brought tremendous improvement in the development of the district in terms on job creation, facility development and cultural preservation. Also, about 56.8% indicated that the conservation of Bia Park has brought positive changes to the lives of the village people. It is clear that the inhabitants of the area are so much in support of the creation and improvement of the facility in question.



**Figure 10: Support for the creation of the Bia Biosphere reserve.**

Source: Field survey, 2012

#### 4.5.5 Perception on the Importance of the Reserve

Results from the study indicate that inhabitants are aware of the importance of the conservation of natural resources. They are of the view that conserving natural resources come with its enormous benefits than one can think of. The table (table 8) below depicts the response.

As evident from the table, about 97.7% of the responses from the public agree to the fact that conservation of natural resources is important for ecotourism development. The respondents stressed that for ecotourism to be sustainable there is a need for them to conserve the natural resources such as flora and fauna species within the biosphere reserve. However reports from the wildlife department indicated that activities such as poaching was not insignificant in causing the reserve to lose some of its valuable natural resources.

**Table 9: Perception on the importance of natural resources conservation**

Option	Frequency	Percentage
Important	176	97.7
Not important	4	2.3
Total	180	100

Source: Field survey, 2012.

#### 4.5.6 Views on Ecotourism and Money Generation for the District

Respondents further mentioned that ecotourism has generated money for the development of the district. Information gathered from the wild life staff confirmed this revelation. It was found that monies generated from ecotourism in the area were



used in helping in the development of the district through creation of jobs through Community Resources Management Association (CREMA), where fringe communities depending in the reserve for livelihood are train on beekeeping, soap making, glasscutter rearing and oil palm extraction among others, building of schools, and supporting the district water and sanitation team in providing water for the local people. The implication is that if the ecotourism industry is further developed, it can significantly contribute to the socio-economic development of the district.

**Table 10: Views on whether tourism generates money for the district**

Option	Frequency	Percentage
Tourism generate money	112	62.2
Tourism does not generate money	68	37.8
Total	180	100

Source: Field survey, 2012.

#### **4.5.7 Views on whether the Conservation has Created New Business Opportunities**

It was discovered through observation and interviews that ecotourism has not enhanced and created new business opportunities for the local people. The information presented in table 9 (below) reveals that the creation of the Bia National Park and the conservation of the natural resources have not contributed to the creation of business opportunity in the area. This was affirmed by majority of the respondents (77.8%). The people indicated that even though the creation of the park is good, it has however not contributed towards the improvement of businesses. The

reason being that the natural attractions of the park is diminishing, so people hardly visit the tourist site in Bia. This situation is worrisome since a lot of the inhabitants(especially traders) indicated that normally the people who visited the park patronized their products; however in recent times visitors/tourist do not come to the park again.

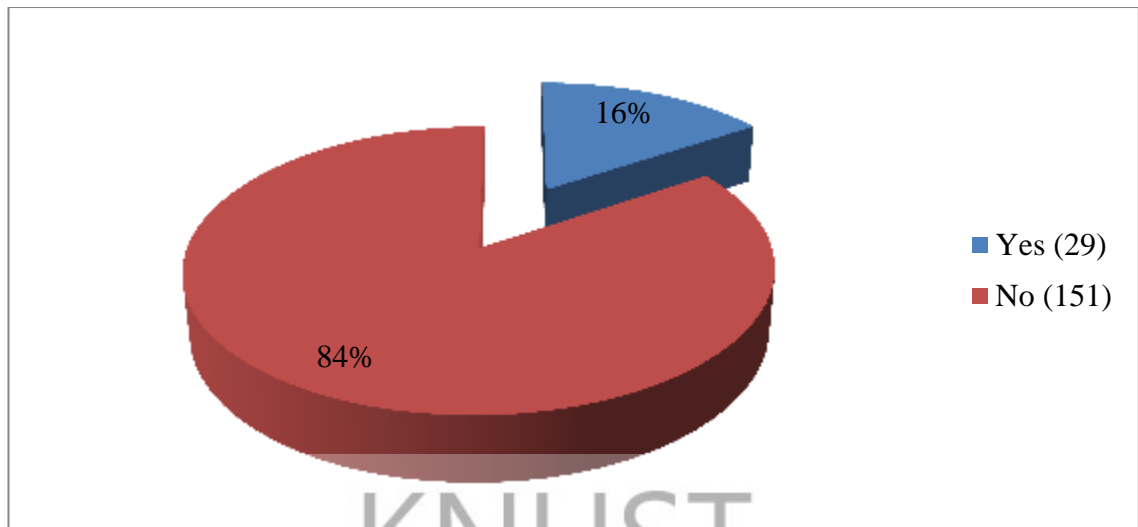
**Table 11: Perception on whether Bia Park has created business opportunity for the people**

Option	Frequency	Percentage
Yes	40	22.2
No	140	77.8
Total	180	100

Source: Field survey, 2012

#### **4.5.8 Perception on whether the conservation of Bia Park protect wildlife**

During the data collection exercise, it was observed that, there were few people who had come to the conservation area as visitors and tourist. Information was gathered from the people on whether the conservation of the Bia National Park protects the wildlife is presented in figure 8. The figure indicates that the conservation of the Biapark has not protected the wildlife species. This is evident as about 88.4% mentioned that the conservation of the park has not protected the wildlife in the reserve. Those in this category reiterated that even though the reserve has been created; activities of poaching and extraction of wood for fire wood have affected the conservation of the par



**Figure 11: Perception on whether the conservation of Bia Park protect wildlife**

Source: Field survey, 2012

#### **4.6 Vegetation Analysis**

##### **4.6.1 Major Natural Resources Present in the Biosphere Reserve**

The earlier submission from both the opinion leaders and the wildlife staff indicated that there were natural resources in the biosphere reserve. It is obvious that the entire reserve is rich in vegetation cover since 86% of responses indicated that the main natural resource is the vegetation cover. Swampy areas are also more common in the forest.

The importance of vegetation in ecotourism cannot be underestimated. All ecotourism attraction sites in the world have natural features that serve the purpose of site seeing for visitors and tourist. It must be emphasized that the suitability of the vegetation for ecotourism is essential for community development since proceeds from ecotourism could be utilized to the benefit of local communities. Results on the rating of the suitability of the natural resources in the reserve indicate that the

vegetation of the reserve is the main resource that is suitable for ecotourism; as shown in the table below.

**Table 12: Rank of suitability of natural resources for ecotourism**

Resources	Ratings	Frequency	Percentage
Vegetation	1	75	75
Plunge pool	2	13	13
Sacred grove	3	6	6
Rock outcrop	4	4	4
Hills	5	2	2
Total		100	100

Source: Field survey, 2012.

This is evident by the fact that 75% of the rating was for vegetation. That is, vegetation as very suitable (i.e. a score of 1) for ecotourism. The rating was based on a ranking order on a scale of one to four (where 1= very suitable and 5= not suitable). The ratings are shown in the above table.

This was followed by the plunge pool with a rate of 2, 13% of the responses. Sacred grove and rock outcrop known by the indigenes as ‘Apaaso was rated 3 and 4 with percentage scores of 6% and 4% respectively. The hill was rated 5 meaning not suitable for ecotourism. Those who rated the hills as not suitable represented only 2% of the responses. As evident from the responses of the opinion leaders, the vegetation in the reserve suits an ecotourist site because of the way it appeals to everyone who visit the reserve. Through observation and responses from the wildlife staff it was evident that the vegetation in the reserves has a unique structure. The

trees that made up the vegetation were very tall trees. As reiterated by the wildlife staff, the area has the tallest trees in Ghana. However these trees are not in abundance since they can be found within a walking distance of one or two per hectare. They have thick branches and leaves that serve as canopies. They can grow to heights of 40 to 45 meters. This layer is somewhat like a roof. The coverage is so dense that it blocks out 98 percent of sunlight. It is in this layer that most of the animals of the forest make their habitat. There is plenty of food in this layer, it is sheltered and the height provides protection from predators. The vegetation is evergreen that is, the leaves on the trees do not change colour. The plate below gives a photograph evidence of the nature of the vegetation in the reserve and national park.



**Plate 2: A plate portraying the nature of trees and the evergreen nature of the Biosphere Reserve**

Source: Field Survey, 2012.

However, in recent times, the flora species is losing its suitability due to certain activities such as commercial exploitation of wood for firewood and subsistence



farming. These activities have significantly impacted on the flora composition of the Bia Biosphere reserve. It is imperative to mention that if appropriate measures are not developed to check these activities, the place would lose its suitability as an ecotourist site with resultant effect on local community development.

#### **4.7 Data Analysis and Presentation of Major Findings**

The sex distribution for the general public indicates that females were populous than males as evident in the Ghana's Population Census reports over the years. However, when it comes to decision making in our traditional set up, males and specifically the elderly, dominate. This confirms why the opinion leaders have more males than females. Also, the age distribution of the general public of the areas is a youthful one since a cumulative percent of 65 ranges between the ages of less than 20 to 40 years. With respect to natural resources in the reserve, it can be deduced that the biosphere reserve has certain natural resources that can promote ecotourism in the area. Ideally, it is not surprising that the biosphere has certain natural resources since any designated biosphere reserve has certain resources that qualify it to be accorded such a name. Evidently, vegetation cover is the dominant natural resource in the biosphere reserve. As buttressed by the wildlife staff, the Bia conservation area lies in the transition zone between two of Ghana's vegetation categories which are the Moist Evergreen Forest in the south and Moist Semi-deciduous (North-West subtype), in the north. From the literature, Ghana Tourist Board (2008) reiterates that, the Bia National Park and Bia Resource Reserve constitute a twin conservation area which is found in the transitional zone between moist-evergreen and moist semi-deciduous forest types. That is, the area is well noted for its evergreen and natural appearance. This implies that the area obviously provides a basis for very attractive bird watching tourism potential. To buttress this from the Ghana Tourist Board's (2008) finding in

the literature, it emphasizes that there are about sixty-two species of mammals that have been recorded in the reserve. These include 10 primates amongst which are the Black and White Colobus, the Olive Colobus, Red Colobus monkeys and chimpanzees. The forest elephant and the highly threatened bongo are present. The Ghana Tourist Board further reiterates that, over 160 species of birds have been recorded; they include the internationally endangered white-breasted guinea fowl.

In relation to the rainfall pattern in the area, the copious rainfall coupled with high amount of temperature recorded in the Bia conservational undoubtedly has implication for vegetation growth. This situation always makes the region evergreen. The frequent drop of rains on the trees and other flora species have really brought to bear the tallest trees and the thick evergreen nature of the Biosphere reserve. However recent human/anthropogenic activities such as induced bush meat hunting, exploitation of wood for charcoal and overgrazing can contribute to loss of its attractive significance. This calls for policies to check and streamline human activities in order to make the area not lose its ecotourism importance. But, are these resources suitable for ecotourism? Responses reveal that over 95% of response agrees to this fact. This indicates that indeed the flora species are suitable for ecotourism in the area.

A range of species reliant on the close canopy conditions has considerably contracted, due to tree slashing activities by poachers in the southern portions of Bia. The resulting changes such as large clearings with higher lights and temperature intensities and lower humidity have facilitated the gradual colonization of the savanna-woodland species. This situation if not attended to would continue to significantly impact on the ecotourism resources in the Bia Biosphere reserve and

would make the place lose its ecotourism significance. As evident as it is, the table below gives an account of illegal activities on fauna and flora which if not curtailed can contribute to the loss of value of the potential ecotourist site. The table below gives a record account of illegal activities such as gunshots, poaching camps, trails/traps, traps/snares, tree cutting/slashing among others. The data was from January 2007 to March 2012. Records of arrested poachers and intruders are also shown in the table (table 12) below.

**Table 13: Signs of Illegal Activities at Bia Conservation Area**

<b>Month &amp; Year</b>	<b>Gun Shots</b>	<b>Poaching Camps</b>	<b>Trails/Paths</b>	<b>Traps/Snares</b>	<b>Tree Cutting/Slashing</b>	<b>Arrested Poachers</b>
Jan-Dec 2007	175	94	227	2634	173	46
Jan-Dec 2008	100	30	69	1473	177	22
Jan-Dec 2009	74	23	8	336	49	58
Jan-Dec 2010	80	12	14	385	36	47
Jan-Dec 2011	68	20	23	227	29	66
Jan-Mar 2012	44	3	6	55	8	2
<b>Total</b>	<b>541</b>	<b>182</b>	<b>347</b>	<b>5110</b>	<b>472</b>	<b>241</b>

Source: Bia Biosphere Reserve Management, 2012

It is indicated clearly that certain activities have been predominant in the reserve for some time now. From January 2007 to March 2012, a total of 541 gunshots were recorded. That is, being it hunters or poachers go to the reserve and hunt for game. This therefore drives the fauna species away with the fear of being killed by these illegal actors. Again, poaching camps have been seen constructed illegally in the

National Park. These are temporal accommodation places for those who engage in these illegal acts. So far 182 poaching camps have been identified from January 2007 to March 2012. Yet again, a number of paths and trails of those poachers have been identified. These (trails/paths) are tracks that are used by the poachers to chase or hunt for games (snails). As of January 2007 to March 2012, 347 paths/trails had been identified and recorded accordingly. The most irritating and precarious part of the issue is the number of traps/snares in the National park from January 2007 to March 2012. A whopping number of 5110 traps/snares have been recorded within the already mentioned time limit. They design these enclosed loops of wire or cord to catch and retain animals in the park. Another serious issue of much concern is the rate of tree slashing by poachers. 472 of such activities have been recorded so far within the already mentioned time limit. The disturbances created by tree slashing by poachers drive the fauna species away and also reduce the number of flora species in the conservation area.

A careful look at the trend of events envisages that there has been a decline in the illegal activities from the time available to the researcher. As palpable as it is, the more poachers hunt and slash trees and destroy other resources, the more these resources are reduced in number/quantity and quality for ecotourism. Taking the issue of the number of gunshots and snares/traps, it is obvious that there has been a reducing trend from 2007 to 2011 that is from 175 to 68 and 2634 to 227. This gives a signpost that the number of fauna species have been reducing in the reserve, hence a logical reduction in the number of gunshots and snares/traps. Another area of concern is the reduction in the number of tree slashing of trees by poachers. A reduction of such activities from 173 in 2007 to 29 in 2011 clearly indicates that the number of trees species has decreased which perhaps reduce the natural



characteristic nature of an evergreen forest, hence a logical reduction of such activities. This said and done, there have been some effort by the wildlife staff to curb this menace. With this, they have been able to make some arrest of some illegal intruders in the reserve. The above table shows that about 241 poachers have been arrested from January 2007 to March 2012.

The plate (plate 3) below gives an evidence of the arrest poacher in relation the talisman found around him.



**Plate 3: Talisman of Arrested Poachers in the National Park**

Source: Field Survey, 2012.

#### **4.7.1 Discussion of Major Findings**

There was high awareness of the existence of natural resources at the Biosphere reserve. The major natural resource in the reserve is the vegetation. Trees that made up the vegetation included Odum, Sapele, Mahogany and Wawa. With the animal species, elephants and chimpanzees were the major animals in the reserve. Birds, antelopes and monkeys were among the few dominant animals found in the reserve. Other resource such as sacred groove, plunge pool and rock outcrop were also found.



The vegetation is the most suitable natural resource for ecotourism even though other resources such as plunge pool, sacred grove could also be suitable when well taken care of. In relation to the fauna species, elephants and chimpanzees are very suitable for ecotourism in the area. Undoubtedly, there is clear evidence that the Biosphere reserve has the potential of drawing people to the area as tourists or ecotourists, however gunshots, traps/snares, tree cutting/slashing, bush hunting and other poaching activities are driving the larger mammals, reptiles and bird species away, consequently reducing their number. These activities have rendered the reserve unattractive enough for tourist since they might not have anything extraordinary to enjoy when they visit the reserve. There is no strict nature reserve from which the public is excluded. They are not excluded because of the loose security in the reserve and that anyone can barge in and out of the reserve anytime. On the other hand, although the researcher did not tour the entire reserve, there were no extensive wilderness areas within which there is no development and which are accessible to the public only by primitive means of transport.

The reserve has the potential of being one of the highly ranked ecotourism sites in Ghana when authorities and stakeholders consider it as a serious business. There has been little effort done on the part of authorities at the higher level. So why should we watch such a potent money maker for government to go waste?

## CHAPTER FIVE

### SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

#### 5.1 Introduction

This chapter is a summary of the major findings from the study. It summarizes findings on the demographic characteristics of inhabitants in the area including the opinion leaders and also summaries findings on the landscapes and natural resources identified at the Bia Biosphere reserves. Findings on the suitability of natural resources and landscapes for eco-tourism and the attitude of the indigenous people towards sustainable development of those features are also captured in this chapter. On the bases of these findings, the researcher shall give certain recommendations which when implemented could help improve the current situation of. This will be followed by conclusion.

#### 5.2 Summary of Findings

##### 5.2.1 Demographic Information

Information gathered indicates that most respondents (general public) were females, thus 52.8% of the response were from females. This meant that there are more females in the area than males as reflective of Ghana's population. However, males dominated the opinion leaders depicting the fact that when it comes to decision making, the elderly especially males are always at the forefront of affaires. Again, it was found out that the age group was a youthful one since 65% were within 20-40 years for the general public. Unsurprisingly, the age group for the opinion leaders fell within 41-60 years since one has to be old enough to qualify to be an opinion leader in our traditional setup. Also it was found out that the educational level in the area is very low. That is, just a few of them were educated. Even with the opinion

leaders none of them had attained tertiary education whereas those with tertiary education were nothing to write home about amongst the general public. Evidently, 38% and 48% of the general public and opinion leaders were illiterates, meaning they never attended school. In relation to the opinion leaders, there situation can be due to the low value placed on education in those days.

### **5.2.2 Natural Resources at the Bia Biosphere Reserve**

All opinion leaders were aware of the existence of natural resources at the Boisphere reserve. The major natural resource in the reserve is the vegetation and trees that made up the vegetation included Odum, Sapele, Mahogany and Wawa. With the animal species, elephants and chimpanzees were dominant in the reserve. Birds, antelopes and monkeys were among the few dominant animals found in the reserve. Other resource such as sacred grove, plunge pool and rock outcrop were also found.

### **5.2.3 Suitability of the Natural Resources for Ecotourism**

Respondents identified the vegetation as the most suitable natural resource for ecotourism. They reiterated that the other natural resources such as plunge pool, sacred grove could also be suitable when well taken care of. In relation to the fauna species, elephants and chimpanzees were strongly agreed to as very suitable for ecotourism in the area. Although suitable, bush hunting and other poaching activities are driving the larger mammals, reptiles and bird species away, consequently reducing their number. The rainfall pattern in the area has always been frequent making the area suitable for ecotourism.

### 5.3 Recommendations

The following recommendation has been made to upgrade the Bia forest reserve for ecotourism:

It is recommended that, there should be a partnership between the government and the private sector to invest in ecotourism considering its enormous benefit. It should be the duty of the Ministry of Tourism and Ghana tourist Board to work with private sector and international funding agencies to develop adequate tourism infrastructure in the area, not only to accommodate tourists but also to provide a suitable ecotourism infrastructure.

Severe punishments and other sanctions should be sited to poachers and others caught in the reserve for any illegal activity. This definitely would serve as a deterrent to others. Sanctions such as payment of huge fine, public disgrace and imprisonment should be considered.

The conditions of services for the wildlife staff and other workers should be improved to serve as a motivation factor to work. There could be an increase in salaries, free accommodation, free or half scholarships for the children of workers amongst others to boost the morale of the workers in the Biosphere Reserve. Public education should be intensified to the communities so as to sensitize them on the negative effects of certain activities of theirs.

Formation of a “Management Committee” that comprises of representatives from the traditional authorities, local government authorities, identifiable local associations and groups, and the management to help collaborate in managing the reserve for the benefit of all. Setup a security committee to improve on up security in the reserve.

Set up of community bye-laws need to be enforced. At the moment, no one seems to take the responsibility of acting as a 'watch-dog' for the reserve. The Unit Committee could be one of the actors to monitor if community members are adhering to the bye-laws.

The pool in the reserve can be fenced with tall lifts mounted outside the fenced for tourists to have a view of the pool once standing on those lifts. This would increase the patronage of the pool.

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#### **5.4 Conclusion**

This study was conducted to evaluate resources and features suitable for eco-tourism at the Bia Biosphere. It is observed that the conservation area is endowed with natural resources that suits ecotourism attraction. The vegetation cover in particular is a major source of ecotourism. Animal species found in the area are also important for ecotourism. However, certain activities of illegality are affecting the reserve especially the animal species. These activities have driven and are still driving the animal species away reducing its ecotourism potential. It is therefore recommended that, authorities and management improve on security to check the menace and also, private investors need to be invited to invest in the ecotourism sector for the benefit of the government, investors and the community at large.

It must be emphasized that this study was with limited resources and time frame. It is therefore proposed that further research and a more comprehensive study be done for detail assessment.



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**APPENDIX ONE**  
**QUESTIONNAIRE**

**Opinion leaders**

- 1) Do you know of natural resources that promote ecotourism    a) Yes    b) No?
- 2) Which of the following natural resources have you identified in the Bia forest reserves?
- a) Rivers    b) mineral deposit    (c) Mountains    d) Sacred grove    (e) Waterfalls f) Vegetation (g) Rock outcrop    (h) other specify.....
- 3) What species of trees are found in the Bia biosphere reserve?
- (a) Odum    b) Mahogany    (c) Wawa    d) Sapele    e) others, specify.....
- 4) What species of animals are found in the Bia forest reserve?
- a) Antelope    b) Elephants    c) Tiger/Lion    (d) Leopard    e) Monkey  
f) Other specify.....
- 5) Do you know of any other natural feature(s) in the Bia forest reserve?
- a) Yes    (b) No
- 6) If yes can you mention these natural features?
- .....
- .....
- .....
- 7) How would you describe the landscape of the Bia forest reserve?
- .....
- .....
- .....
- 8) How would you describe the rainfall pattern in this area annually?
- (a) Very frequent    b) Frequent    c) Indifferent    d) Not frequent  
e) Not at all frequent

9) What is the temperature situation in this area?

- a) Very high      b) High      c) Low      d) Very low

(10) How would you rate the suitability of the following resources for ecotourism in the Bia forest reserve? (Where 1=very suitable and 10=Not all tall suitable)

Economic Activity	Rank	Reason(s)
Rivers		
Mineral deposit		
Mountains		
Sacred grove		
Waterfalls		
Vegetation		
Rock outcrop		

11) To what extent do you agree to the fact that the vegetation in this area is appropriate for ecotourism?

- a) Strongly agree      b) Agree      c) Disagree      d) Strongly disagree

12) How far do you agree that, the animal species in the Bia forest reserve befits ecotourism?

- a) Strongly agree      b) Agree      c) Disagree      d) Strongly disagree

13) Would you say the temperature in this area is suitable for ecotourism? a) Yes  
b) No

14) Give reasons for your answer in question 11?

.....  
.....

15) Is the rainfall pattern favourable for ecotourism in this area? a) Yes      b) No

16) To what extent do the general climatic conditions in this area favour ecotourism?

.....

.....

17) How do you see the road network in this area?

a) Very good                      b) Good                      c) Bad                      d) Very Bad

18) Are there hospitality facilities in the area? a) Yes      b) No

19) What is the implication of your choice in question 9 towards ecotourism?

.....

.....

20) What are some of the benefits of ecotourism to the community?

#### **Wildlife Staff**

21) What species of trees are found in the Bia conservation area?

.....

.....

22) What species of animals are found in the Bia conservation area?

.....

.....

23) How suitable are the river(s), vegetation, animals and other natural resources for ecotourism?

.....

.....

24) What are some of the activities that threaten the Bia conservation area?

.....

.....

25) Has there been any incidence of poaching activity in the Bia conservational area?

a) Yes b) No

26) If yes, what are the effects of this activity on ecotourism in the area?

.....

.....

27) What have you done in your capacity as a staff to sustain the Bia conservational area for ecotourism?

.....

.....

28) What challenges do you face in your quest to preserve the place for ecotourism?

.....

.....

29) How do you see the road network in this area?

a) Very good      b) Good      c) Bad      d) Very Bad

30) Are there hospitality facilities in the area? a) Yes b) No

31) What is the implication of your choice in question 9 towards ecotourism?

.....

.....

### General Public

32. Age <20 years [ ] 20-30 years [ ] 31-40 years [ ] 41-50 years

33. Sex      male [ ]      female [ ]



34. Level of education non-formal ☐ JHS/MS ☐ SHS/VOC ☐ Tertiary ☐

35. Is the conservation of natural resources important?

- a. Yes    b. No

36. Do you have any tourist lodges/facility available?

- a. Yes    b. No

37. Do you think would tourism generate money for the village?

- a. Yes    b. No

38. Do you think the conservation of Bia Park has provided jobs for people in the village?

- a. Yes    b. No

39. Do you think the conservation of Bia Park has created problems in your life?

- a. Yes.    b. No

40. Do you think the conservation of Bia Park has created business opportunities for the people in village?

- a. Yes    b. No

41. Do you think the conservation of Bia Park has contributed to education in the village?

- a. Yes    b. No

42. Do you think the conservation of Bia Park has caused conflicts among people in the village?

- a. Yes    b. No

43. Do you think the conservation of Bia Park has brought positive changes to the life of village people?

- a. Yes    b. No

44. Do you think the conservation of Bia Park has been the cause of increased crime in the village?

a. Yes    b. No

45. Do you think the conservation of Bia Park does not benefit anyone in the village?

a. Yes    b. No

46. Do you think the conservation of Bia Park does not protect wildlife?

a. Yes    b. No

47. Do you think education is important?    a. Yes    b. No

48. Do you like wildlife?    a. Yes    b. No

49. Do you think the conservation of Bia Park was created for the betterment of our village?

a. Yes    b. No

50. Do you live better because of the conservation of Bia Park.    a. Yes    b. No

51. Would be happier if the conservancy was not there?    a. Yes    b. No

52. Do you support the conservation of Bia Park?    a. Yes    b. No

53. Do you think tourism bring problem animals?    a. Yes    b. No

54. Do you think there is too much wildlife?    a. Yes    b. No

## APPENDIX TWO

### DETAILED DATA OF SIGNS OF ILLEGAL ACTIVITIES AT BIA

#### CONSERVATIONAL AREA FROM JANUARY 2007 AND TO MARCH 2012

2007						
Month	Gun Shot	Poaching Camp	Trails/Path	Trap/Snare	Tree Cutting /Slashing	Poachers
Jan	8	3	21	56	18	5
Feb	18	6	24	76	14	0
Mar	22	5	22	60	0	0
Apr	12	7	0	50	0	19
May	7	13	0	60	0	10
Jun	9	12	0	92	0	1
Jul	20	14	24	484	9	2
Aug	24	16	35	428	15	4
Sep	12	7	28	359	18	5
Oct	19	7	42	421	55	0
Nov	10	1	17	401	26	0
Dec	11	3	14	147	18	0
2008						
Jan	19	4	26	180	35	3
Feb	15	7	17	117	65	1
Mar	9	2	5	62	6	0
Apr	10	4	4	100	21	0
May	3	1	1	93	12	2
Jun	11	1	6	95	19	2
Jly	4	4	0	96	5	5
Aug	7	5	10	183	8	2
Sep	12	1	0	374	1	1
Oct	3	0	0	133	0	5
Nov	1	0	0	24	0	1
Dec	6	1	0	16	5	0

2009						
Jan	12	1	0	28	1	1
Feb	17	0	0	62	13	0
Mar	6	1	1	77	2	6
Apr	7	6	0	6	1	16
May	1	5	0	35	0	8
Jun	2	0	0	22	0	10
Jul	10	0	0	58	4	0
Aug	1	3	5	18	16	2
Sep	3	0	0	19	6	8
Oct	5	3	1	2	6	6
Nov	3	1	1	0	0	0
Dec	7	3	0	9	0	1
2010						
Jan	14	0	3	3	2	0
Feb	5	0	0	20	0	1
Mar	8	1	6	9	0	14
Apr	8	1	2	0	1	11
May	8	1	1	11	0	6
Jun	9	0	0	44	19	0
Jly	5	2	0	21	4	0
Aug	2	2	1	46	0	2
Sep	11	1	1	58	5	5
Oct	3	2	0	133	0	5
Nov	1	1	0	24	0	1
Dec	6	1	0	16	5	0
2011						
Jan	9	1	0	11	5	2
Feb	5	0	0	13	12	2
Mar	4	1	0	12	0	9

Apr	7	6	0	6	1	16
May	1	5	0	35	0	8
Jun	2	0	0	22	0	10
Jul	6	2	0	35	3	4
Aug	10	2	4	63	1	5
Sep	7	1	2	20	2	3
Oct	4	0	0	6	3	0
Nov	4	1	1	4	0	7
Dec	9	1	6	0	2	0
2012						
Jan	14	0	3	51	1	1
Feb	21	2	2	3	2	0
Mar	9	1	1	1	5	1

Source: Bia Conservational Reserve Management, 2012

