

**THE LAND USE PATTERN
OF
IFON GAME RESERVE, ONDO STATE**

BY

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DEDICATION

*This thesis is dedicated to
my late father Alhaji Y.S. AJANAKU
who strived hard to make me successful in life.
May his soul rest in perfect peace (Amen).*



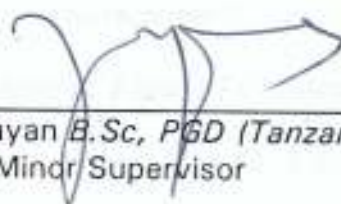
CERTIFICATION

I certify that this work has been carried out by Lateef Olofinjana Suberu in the Department of Fisheries and Wildlife, School of Agriculture and Agricultural Technology, Federal University of Technology, Akure, Ondo State, Nigeria.



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ABSTRACT

In an attempt to investigate the level of human encroachment in Ifon Game Reserve, 5% of the six villages were randomly selected at different regions of the reserve. The selection was done in a way that all ecological zones were represented. The following methods were used for the study: Oral interview, questionnaire and direct observation. The following parameters were considered: Population density, occupation, proximity to the reserve, and nature of damages done to biodiversity in the reserve. Photographs of important places and features were taken. Results were analysed using percentage distribution ranges. Graphical representation were used. Results showed that a large population illegal occupants are resident in the reserve. The illegal residents carry out a lot of nefarious activities on the park such as poaching, logging, fishing, mining, cultivation, bush burning and road construction. Suggestions for effective control of the various destructive activities of man and the methods of maintaining the reserve for meeting with the objectives with which it was established were made.

CHAPTER ONE

1.0

INTRODUCTION

Population growth, the expansion of Agriculture and livestock raising, the building of cities, roads and pollution are among the many pressures that diminish the quality and quantity of natural habitats remaining in the world. Along with illegal hunting, habitat reduction and its degradation threat biodiversity and the economic, scientific and cultural values it represents (Agyel-Ohemeng 1991).

To reinforce the positive aspects of human population/nature relationship and avoid or ameliorate negative influences which may destroy or damage the harmony between the people and their environment our area should be officially protected.

National parks are area earmarked for human visitation on the criteria of protection of wild animals, wild plants, scenery and many other things. This type of protection is called a total protection.

In the area of partial protection, natural resources are allowed to be tapped or prescription with emphasizes on sustenance. Example of this is Game Reserve and forest reserve. Other areas of protection are wildlife sanctuaries and world heritage. The reason of its worth is purposely for the present and future generations.

In any of the conserved areas, exploitation either by partial or heavy rate is prohibited. But the enforcement of law preventing exploitation becomes a problem due to the fact that developing countries such as Nigeria (Elliot 1994), a vicious circle exists in which people degrade the marginal

environments, in which they live, because of their poverty. This is so because they lack alternative sustainable options.

The success of any conservation management lies in the hands of local inhabitants in and around the area (Ajayi (1992).

No gainsaying, it is compulsory that inhabitants are involved before any conservation programme is worked out.

Such consideration can be viewed in three perspective:-

- (1) Their means of livelihood
- (2) Their culture
- (3) The people's believe and values

The people's belief and values are affected by their culture and their culture in turn affects their means of livelihood.

The above statement may mean the 'Socio-economic activities' in that the society go about them as to survive this is depending on natural resources in their raw state (Elliot, 1992). This is characteristics of developing countries. e.g Ghana, Tanzania but with reference to Nigeria.

The land use pattern can simply mean the harmonious balance of people and nature of conservation, social and economic values has thus been maintained in what is legally known as the Pinelands National Reserve (Duncan and Judy, 1987).

1.1 IMPORTANCE OF WILDLIFE

The world Wildlife has not been universally defined on one term. The Wildlife will only imply all plants and animals living outside the direct control

of man. This mean none domesticated animals and none cultivated plants.

Wildlife are all animals that are not domesticated, plants are inclusive along with invertebrate animals, fish, reptiles and amphibians and all covered. (Eltringham 1994).

All the resources found and conserved in National parks and Game Reserve in Nigeria are basically floral and fauna resources. They are known to be renewable, but potentially destructible resources.

National Parks, Forest Reserves, Game Reserve and Wildlife sanctuaries are generally regarded as being most worthy of protection for wildlife and scientific purposes. This is so as wildlife has its inhabitants in such areas. Man has long been utilizing the wildlife resources irrationally until 20th century when it became conscious of sustained use.

According to (Williams 1989), Forest provide resources of immense value for the human future.

1.2 WILDLIFE VALUES

Today it is possible to examine the values of wild animals in ways that could not have been considered in earlier times. These value brought in part by the relative scarcity of wildlife, are many, and their importance varies from one nation and one level of cultural development to another. Values of wildlife can be either positive, enhancing life for man, or negative, detracting from the quality of human living.

In some areas and for some species the most generally recognised, value of wildlife is commercial in the direct sense of contributing material

things that are sold in the market place. The market value of Ivory threatens the future of elephants in some parts of Africa, and the demand for rhino horns makes the preservation of the rhinoceros difficult. The meat value of game alone in Africa and USSR would preclude the conversion of game lands into ranches for domestic livestock if the comparative monetary worth were given due consideration. Furthermore, the possible value of wild game as a source of new domesticated species of livestock needs much more exploration if we are truly interested in producing maximum amounts of meat and other animal products as sustained crops from the land. (Dasmann 1964).

The importance of wildlife by-products in traditional medicine has been stressed by Asibey (1974) Ajayi (1978) and Afolayan (1981). Ajayi 1978 offers a good deal of information on the use of wildlife by products in preventive and curative medicine and also for invoking and appeasing traditional gods and witches.

Peasant populations hunted and ate a variety of mammals, birds and reptiles from which they obtained most of their protein. Amongst others Asibey (1987), Ajayi (1979) have reported the use of wild as a source of protein in African countries. In Ghana, wildlife is the source of 65% of the animal protein annually in rural areas (FAO 1981), in Botswana, 60% of the animal protein is derived from wildlife (FAO 1969). In Nigeria, bushmeat has been contributing immensely to the eradication of protein deficiency and malnutrition in the rural areas. Most especially in the Forest region where domestic animals do not thrive due to infestation of tsetsefly and other diseases (Ayeni and Ajayi 1983).

The life is double sworded, hence there is a negative commercial roll played by the rodents as a wildlife species.

Most damage is below the level of economic injury but recent results have shown that in south western Nigeria in particular, rodent damage may seriously impair man's efforts to produce food (Funmilayo and Akande, 1974b) and even animal protein (Funmilayo and Akande, 1974a).

Commensal rats consume food stuffs and damage a wide range of household goods by gnawing or consuming them. Damage caused by rats in homes, stores and commercial premises is now considered to be a serious economic problem in Nigeria. Damage apart, commensal rats are undesirable companions of man, not only because they carry deadly human disease agents (Akande and Funmilayo, 1974) but also because they disturb peace and rest and foul food and the home environment with their urine, faeces, tail and feet marks.

1.3 IFON GAME RESERVE

Ifon Game Reserve is situated between latitude 6° and 40' and 7° 15' latitude and longitude 5° and 5°55'E.

It has a total area of 282.70km². The reserve is burdened in the South and Southwest by the Akure-Benin express road. In the East by Big Osse River and partly by Asaboro Rubber plantation. It is 20km from Owo. The mean annual rainfall is about 1400mm. Usually the Wet season spread over 7 months April to October. While the dry season covers 5 months.

The vegetation can be classified into tropical rain forest and Savanna

wood land. It is due to the richness of Floral and Fauna that tempted poachers to exploit the Reserve.

The water is available in the reserve through out the year (Afolayan 1992). Hence poachers are sure of getting animal anytime they are in the reserve.

While the soil is of high mica content (Campbell 1961) Farming will be difficult to poaching.

1.4 RECREATIONAL VALUES

The economic importance of wildlife goes beyond the provision of animal protein (Ayodele 1988).

Man has a clear responsibility to preserve his heritage of wildlife and wilderness areas for the enjoyment of future generation. (Anadu 1990).

In many countries, wildlife has a high economic value that can be realized from direct marketing of its meat or hides. This is its recreational value. Kenya for instance earned about N146 million in 1979 from tourism Tuna and Nardes (1983). Foreign exchange earnings from Tourism based on wildlife is helping Kenya's economy to the tune of more than N60 million annually (Ajayi 1972). In the United States, for example more than 30 million people spend some billions of dollars each year in hunting and fishing (Dasman 1964). These support major Tourist and recreational industries. Sport hunting trophy fees can generate substantial incomes at relatively low sustainable levels of off-take. For example, the returns from an impala killed for its meat is less than U.S \$50, while a safari operator can sell the same

animal to a client for US \$200 or more. Tourism is one of the major industries in the world today. Many types of business cater for their needs by producing fire arms and ammunition, or fishing tackle, camping equipment, recreational vehicles or by providing accommodation or food and drinks. Adeola (1991) also expressed that expenditure per visitor in the National Parks and game reserves showed more per capital expenditures from foreigners than from Nigerians. The two major conservation areas in Nigeria (the Kanji Lake National park and Yankari National park formerly Yankari Game Reserved) received about 10,000 and 50,000 visitors respectively (Afolayan 1980). The amount accrued from sales of entry tickets, lodging and food sold to visitors was about \$30,000 from the Yankari Game Reserve, while that of Kanji Lake National Park was \$15,000 (Afolayan 1980). (Clarke and Mitchell 1968) reported that in 1960, about N2,511,400 was derived from visiting sport hunters to East Africa. In the same year, revenue from resident hunters was N234,200 while revenue from photographic safari (that is, those visitors who come for the purpose of powdering films) was N2,822,200 (Ajayi 1973).

1.5 AESTHETIC VALUE

The recreational value of wildlife takes many different forms. In the national parks and wildlife resources of the world it is often the aesthetic appeal of wildlife that attracts people. People come for the purpose of seeing or photographing wild animal in their natural surroundings. If wildlife

has no other value and were economic detriment it would still be worth preserving for its sheer beauty and appeal to the human spirit (Dasmann 1964). Feathers of many birds are desired because of their ornamental values. Eltringham (1994) reported that a small tourist trade in Flamingo feathers has developed in the Rift valley of Kenya where feathers picked up from Nakuru National park and elsewhere are fashioned into "flowers". The ornamental value of wildlife in Nigeria has been stressed by (Ayeni 1992). It is also important to report the use of wild animals as pets under the aesthetic value of wildlife. According to Eltringham (1984) most pets belong to only a few species; dogs; cats; rabbits; guinea-pigs, rats and mice amongst the mammals, budgerigas and canaries amongst birds, tortoises and gold fish. World wide aesthetic values of wild animal life has become more important and this provides an economic justification for marine reserves, national parks and wildlife refuges. (Dasmann 1964) reported that societies that spend great sums to preserve historical monuments, works of art or scenic vistas also must be willing to preserve wildlife for its historical, artistic and scenic merit.

Almost all religions show some degree of reverence for wildlife animals.

1.6 SCIENTIFIC VALUES

The scientific value of wildlife justifies its place in the world. Of major significance in this respect is the ecological value of wild animals. (Dasmann 1964). Their role as part of the human life support system,

regulating local climates, water flow, and nutrient cycles must be recognised, valued and safe guarded. It is also accepted that ecological stability can only be promoted by conserving the genepool (Ayeni 1992).

Apart from ecology, wildlife has scientific value that we often can neither measure nor clearly state. Most of the advances in biological and medical research have come through the studies of wild or formerly wild species of animals. Studies of rhesus monkeys reveal new facts about human blood chemistry and the prevention of disease (Dasmann 1964).

1.7 THE STATUS OF NIGERIAN WILDLIFE

Only 9.8 percent of Nigeria's total land area is under conservation out of which game reserves and national parks form about 3 percent. Most of the areas under conservation have been extensively encroached upon by other land uses and the wildlife resources have suffered serious depletion as a result of over-exploitation and gross abuse. More species are becoming endangered daily and the habitats of wildlife continue to dwindle (Afolayan 1992).

However today, the status of Nigerian wildlife is that of depleted resource. Current estimates by the World Bank (1990) has it that 65% of the original wildlife habitats have been lost through logging and charcoaling, conversion to Agriculture and livestock grazing. The remaining wildlife resources are under going pressure to meet the needs of the nation stressed economy and rapidly growing human population.

The down ward trend of wildlife populations can be attributed to

poaching activities. This is because of starvation and persistent poverty among the local communities (Ayeri 1983).

In 1988 Nigeria endorsed the National conservation strategy.

In 1989, Nigeria set up the Federal Protection Agency and the Natural Resources Conservation Council.

Decree 36 of 1991 repealed degree 46 of 1979, and Borgu was amalgamated with Zurguma area to form the first National park of Nigeria. The Kanji Lake National park.

At this juncture, five other parks were created.

These are:-

- The Yankari National park
- Old Oyo National park
- Gashaka Gumti National park
- The Cross River National park
- The Chard basin National park

This gives a total of 6 National parks. For further development, Nigeria has 6 Games Reserve which are now proposed National Parks (Nigeria National Parks bulletin, 1994).

These are located at

- (i) Ifon as shown in Figure 1
- (2) Gujba
- (3) Sambisa
- (4) Kugo
- (5) Kamuku and

(6) Kuyambana

Nigerian conservation has a problem. This is as a result of general lack of employment, lack of food and lack of security even if you are employed. This much enforce people to exploit these resources indiscriminately.

1.8 JUSTIFICATION

The United Nations conference of 1992's "Earth's summit" in Rio de Janeiro, Brazil was based on the link between the environment and the development. This has been woefully ignored. Even though, the meeting was attended by the Heads of States and Government officials.

It worths to mention that Ifon Game Reserve happened to be one of the environments demarcated as a conservation area nearest to Federal University of Technology, Akure. It also has so much potential, in order to harness this, the impact of human activities must be studied both in the negative and positive aspect.

Study on "abundance and distribution of large mammals in Ifon Game Reserve" by Fatoba (1991) highlighted some of the activities carried out by the surrounding inhabitants. Few of them are poaching, illegal farming. There is urgent need to analyse the effect of such activities.

In Nigeria, the downward trend of wildlife population and floral species can be attributed to poaching activities. From interviews with many poachers arrested within protected area, it was discovered that hunting was carried out primarily for meat and money (Ayeni 1977). This was because poaching was considered to be more lucrative as an alternative to farming.

It is clear that as long as people believe that natural resources are God gift, which should be used continuously as they like, the nature reserve areas will continue to experience human destruction, poaching etc, (Thomas 1967). Other activities are indiscriminate burning and illegal farming (Lammend 1988).

Socio-economic activities and their impacts can be regulated (Ajayi 1992) by involving local communities in every stage of conservation and wildlife management programmes.

FIG. 1.1: THE FEDERAL REPUBLIC OF NIGERIA: LEGEND GASSETTED NATIONAL PARKS AND PROPOSED NATIONAL PARKS.



1.9 OBJECTIVES

- (1) To assess the level of human activities in Ifon game Reserve.
- (2) To assess the impact of human activities on nature conservation in Ifon game reserve.
- (3) To make recommendations for the control of human encroachment on Ifon game Reserve.
- (4) To recommend the steps to be taken for up grading the game reserve into a National park in the nearest future.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 WILDLIFE CONSERVATION

Wildlife conservation is very important in the life of a nation as it provides recreation, tourism, employment, foreign exchange, fruits, medicinal herbs, soil conservation, ropes and wild animals. We cannot be continuously occupied with the daily rounds and common tasks of life. Out in the open air observing the ways of wild things we gain a sense of proportion and a mental balance so more than ever necessary in these times of human stress and strife (Christopher 1988).

The conservation of endangered species is an essential part of wildlife management and where species have been over-exploited protection of these animals in National parks or other rigidly controlled areas may be the only practical solution to ensure survival (Lanly, 1982). Lanly (1982) reported that the main cause of deforestation is clearing for agriculture, but uncontrolled logging gathering for fire and overgrazing are also taking their toll. It was estimated that deforestation rates in tropical Africa exceeded planting rates by a factor of 29 to 1 in the period 1975 - 1980.

Loss of forest habitat is now a major concern as a cause for decline of wildlife. Estimates of annual deforestation rates in Latin America vary considerably, (Holdgate 1987). Tello (1988) reported that forests are being cut for timber, agriculture, building and conversion of the land to grass for cattle production. In Africa it is customary for loggers to live by killing wild game and in many instances logging companies employ professional hunters

who are in direct competition with wildlife for prey species. It is quite possible for a strict nature reserve, a managed reserve, natural monuments a special reserve and a nature park to coexist within the same territory each pursuing its specific objectives (Krinskii, 1972).

2.2 WORLD PROTECTED AREAS

There are different types of protected areas based on the objectives of their establishment. Krinskii (1972) defined the following places as reserved areas:

- (a) Strict Nature Reserve: Which aimed at preserving valuable natural complexes in capable of self regulation such as wildlife reserve.
- (b) Managed Nature reserve: This is aimed at preserving natural complexes which are renewable but incapable of self regulation. They are used to conserve small lakes and similar areas.
- (c) Natural monuments: This is aimed at preserving natural wonders such as caves and waterfall.
- (d) Special natural reserves: Individual plant and animal species are protected. The habitats are also conserved. Other natural resources can be exploited but this should not have deteriorating effects on the fauna and flora of the environment.

National Parks: This is aimed at conserving nature areas intended for recreational purposes, here landscape is often reserved.

2.3 NATURE RESERVE AND RECREATION

Nature is constantly being transformed by modernity. Nature is used by man in two major forms:

- (i) Recreational;
- (ii) Aesthetic (Mac-Cannel 1976).

The recreational form are sport hunting and fishing, rock and mountain climbing, snowmobile, skiing and sailing. Aesthetic uses of nature include sight seeing and viewing of sceneries such as landscape, mountain, ranges, plains, forests and coastlines. Others include landmarks or outstanding features of the landscape, high rise mountain peaks and rock formations.

In Nigeria, rock formation is found in Abuja (Zuma rock) and other places, caves in Onitsha and large water falls e.g. Ogunike caves and Assop falls in Ijebu Ode and Jos Plateau respectively (Falade, 1994). Modern tourism is recognising nature and the touristic experience of it, so it may continue to serve as a basis for unity in the family of man (Mac-Cannel, 1976).

2.4 NATURE CONSERVATION AND MAN

Marvelous range of natural situations and vegetation type have interacted over many years with activities of man to produce the rich and facilitating tapestry that makes up the British country side (Colebourn and Gibbon 1970). Since the beautiful fascinating scenery found in developed nations of the world like Britain, or United States of America country side

did not happen by magic or by accident but by design through human ingenuity, appreciating the work of nature through the efforts of conservationists over the years then it is not impossible for a similar situation to come about even in Nigeria all things being equal (Adesanmi 1995).

Over the years, the control and concentration of wild animals by man was by bush burning and this gave them not only opportunity to destroy the natural habitat of wildlife but also to reduce their population. In Africa, sport hunting is common in the dry season. This is a way in which farmers and hunters manipulate the forest for their selfish ends.

Sehoma (1978) reported that national parks are asset to a country, yet South America is trailing behind the less developed nations in Africa in proclaiming national parks. Each country should proclaim at least 10% of its soil as national parks.

(Poak 1988) reported that with a period of just three years since the opening of tourism in South Zaire National des Virunge Park, the revenue has increased drastically from zero to around £23,000 (N460,000) per month during peak of tourist periods.

**TABLE 2.1: THE POSITION OF SOME AFRICAN STATES WITH REGARDS
TO THE PERCENTAGE OF LAND PROCLAIMED NATIONAL
PARKS.**

	Land Area	% of land used per National parks
Botswana	10,007,300 ha	14%
Kenya	6,506,500 ha	11%
Tanzania	7,903,176 ha	8.4%
Zambia	5,899,400 ha	7.9%
Rhodesia	2,225,609 ha	5.9%
South Africa	2,938,208 ha	2.4%

Source: African Wildlife International (1978)

2.5 BUSHMEAT SUPPLY IN NIGERIA

According to Ajayi (1978), forest mammals in West Africa are hunted using simple tools such as traps, snares, spears, arrows, bows, poisoned baits and nets. In the hunting traditional group, dogs are also used.

The use of Dane guns and short guns came as a result of man's advancement. However, both old and new hunting methods are still applicable to Nigeria.

In either of the two methods above the kill can be used domestically or commercially, this depends on the size or the number of the animal killed.

However, hunting is very persistent in the dry season when there will be clear visibility due to burning of the bush.

It worths to mention that in Ghana one can only hunt in one's village (Asibey, 1978). Olawoye and Ajayi (1975) reported same for Nigeria.

Whatever way, wildlife laws request the obtainance of licence to kill any game except the endangered species.

After the kill, there is a procedure or structure by which they dispose the Bush meat in the market.

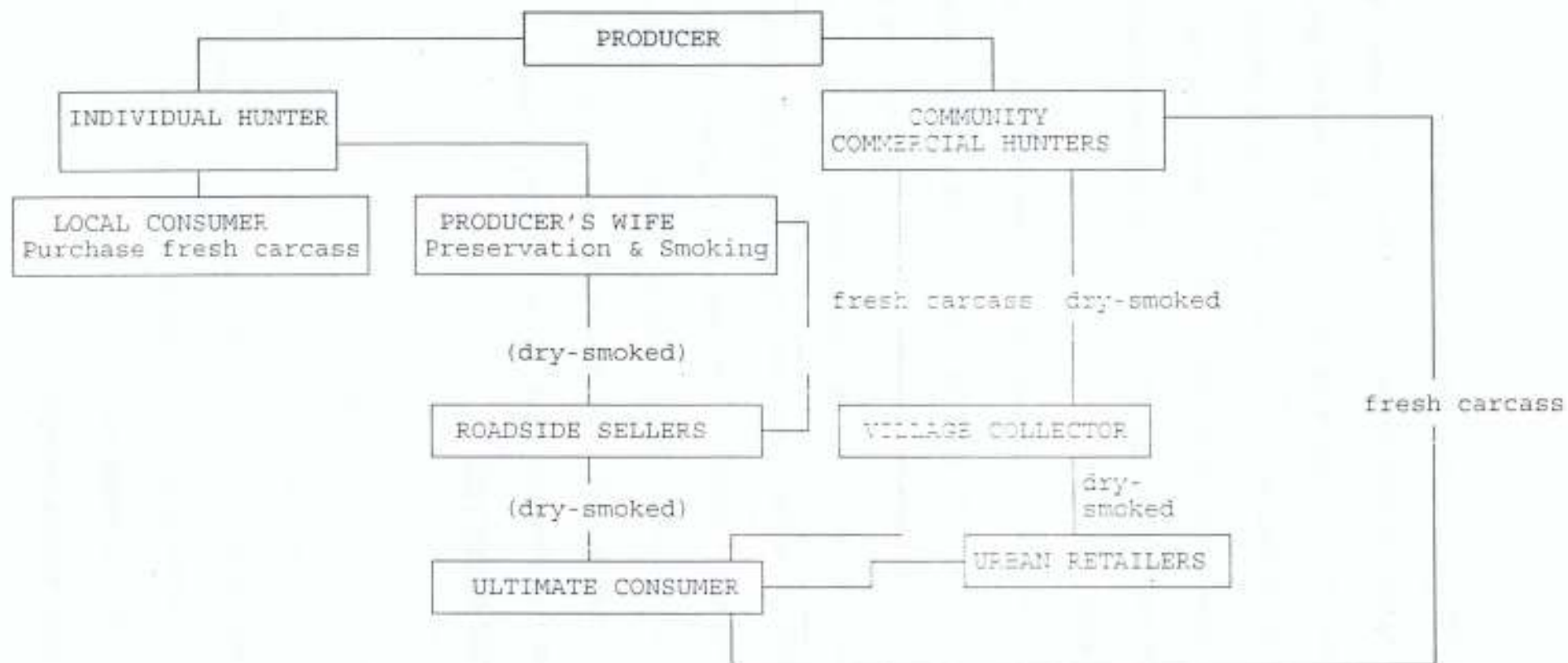


Fig. 2.0. Production and Market structure for bushmeat in West Africa

Source: Ajayi S.S (1978).

When plenty animals are killed by professional hunters, these are sold to the villagers' wives or individual wives who dried or smoked the meat for preservation. These are finally taken to the road side for sale at high price. On the other hand Bushmeat collectors are arranged in the village who later sell to the urban retailers and the ultimately to the final consumers. The more it goes from hand to hand the more it costs.

2.6 WILDLIFE EXTINCTION

According to Ajayi (1979) the following species of wildlife are known to be extinct in Nigeria: rhinoceros, giraffe, giant eland and ostrich. Many of the highly priced species such as elephant, chimpanzee, hippopotamus, leopard and water chevrotain are currently facing threat of extinction in Benin Republic, Cameroon, Ghana, Ivory Coast, Liberia, and Nigeria.

The declining trend in Nigeria's wildlife researches is illustrated by the decrease in revenue from export of wild animals which fell from 4.4 million U.S dollars in 1966 to 21,000 US dollars in 1977 (Ajayi, 1979). This decline was not as a result of legislative control but because of insufficient animals to export.

Milligan and Ajayi (1978) reported that the biomass densities of 16 herbivorous mammals in eleven National parks in West and Central Africa showed a considerable range from 214 kg/km² to 4032 kg/km². It was further reported that in most cases, the present biomass densities are far below the carrying capacity of the habitat or put in a lay man's language, the animals that exist in these National parks are less than 10% of what the

habitat can naturally carry. ACNP (1981) reported that primate population has been greatly reduced in the forest, because their habitat has been under pressure for the extraction of minerals timber agriculture, road construction and other human activities. In some areas the wild land are becoming so restricted that the management of animal population has become necessary to safeguard their future and bring utilization of some of these species into line with the capacity of the habitat. To support them export restriction has been imposed on prismatic over the past decade for conservation purpose.

Rossel and Dorothy (1987) observed that habitat destruction is the most important factor threatening the existence of non human primates. Since about 90% of primate species occur in tropical forests of Asia, Africa and South and Central America.

ACNP (1981) reported that conditions that are indicative of unstable environments or population are as follows:

- (a) a forest that have been disturbed recently, either through natural events such as fire, cyclones or changes in soil salinity or free felling by man;
- (b) change in cultivation practices. The balance of populations in an area where they partly or wholly depend on agriculture would be changed by a change in long established cultivation practices in the area;
- (c) natural disease for example the introduction of yellow fever to South America resulted in a marked decline in howler monkey populations (Collias and Southwick 1952).
- (d) hunting or trapping by man.

- (e) introduction of human settlements.
- (f) Highly irregular climatic regimes.
- (g) An impoverished floral and fauna relative to environmental conditions.

ACNP (1981) also reported the following conditions as indicative of long term environmental stability:

- (a) Forest and vegetative types that are climax and undisturbed.
- (b) Constant climatic regimes, a climatic regime in which temperature and amount and seasonal distribution of rainfall follow the same pattern over many years. Most wildlife population are attained to the predictable seasonal flux in resources.
- (c) A balanced flora and fauna relative to environmental type.

2.6 FACTORS AFFECTING ECOSYSTEM AND ENVIRONMENTAL STABILITY

A stable ecosystem is an ecosystem with a constant species composition over a long time (Ola Adams and Hall 1987). A consistent linear relationship between the natural logarithm of girth size class and the percentage of stem in each class and log normal species abundance distribution. It also maintains a stable soil structure and adequate sink of organic matter (Ero 1985). Soil stability is assured by the prevention of erosion, sand dune formation, run-off or leaching. Species diversity confers to stability on natural ecosystems. The forest ecosystem protect the soil

from degradation and nutrient loss, control the quality and quantity of water and affect climate by assisting in maintaining the earth's temperature and to control the amount of carbondioxide in the atmosphere. Most of the nutrients are tied up in the biomass and the root mat of undisturbed forest ecosystem prevent loss of nutrients from the system.

Man is a vital part of most ecosystems. He manipulates the ecosystem for his desired end and seldom predicts the full consequences of his actions. Ecosystem is being constantly manipulated to remove renewable products. Human activities seem to be removed homeostatic mechanisms and promote instability sometimes to the point of outright destruction (Ola- Adams 1992). These human activities result in the removal of vegetation cover and exposure of the soil with attendant soil erosion, flooding sand dune formation, desertification and changes in micro-climate. The periodic disturbance of natural forest ecosystem could lead to reduction in population size and species composition.

CLIMAX VEGETATION
(Stable Ecosystem)

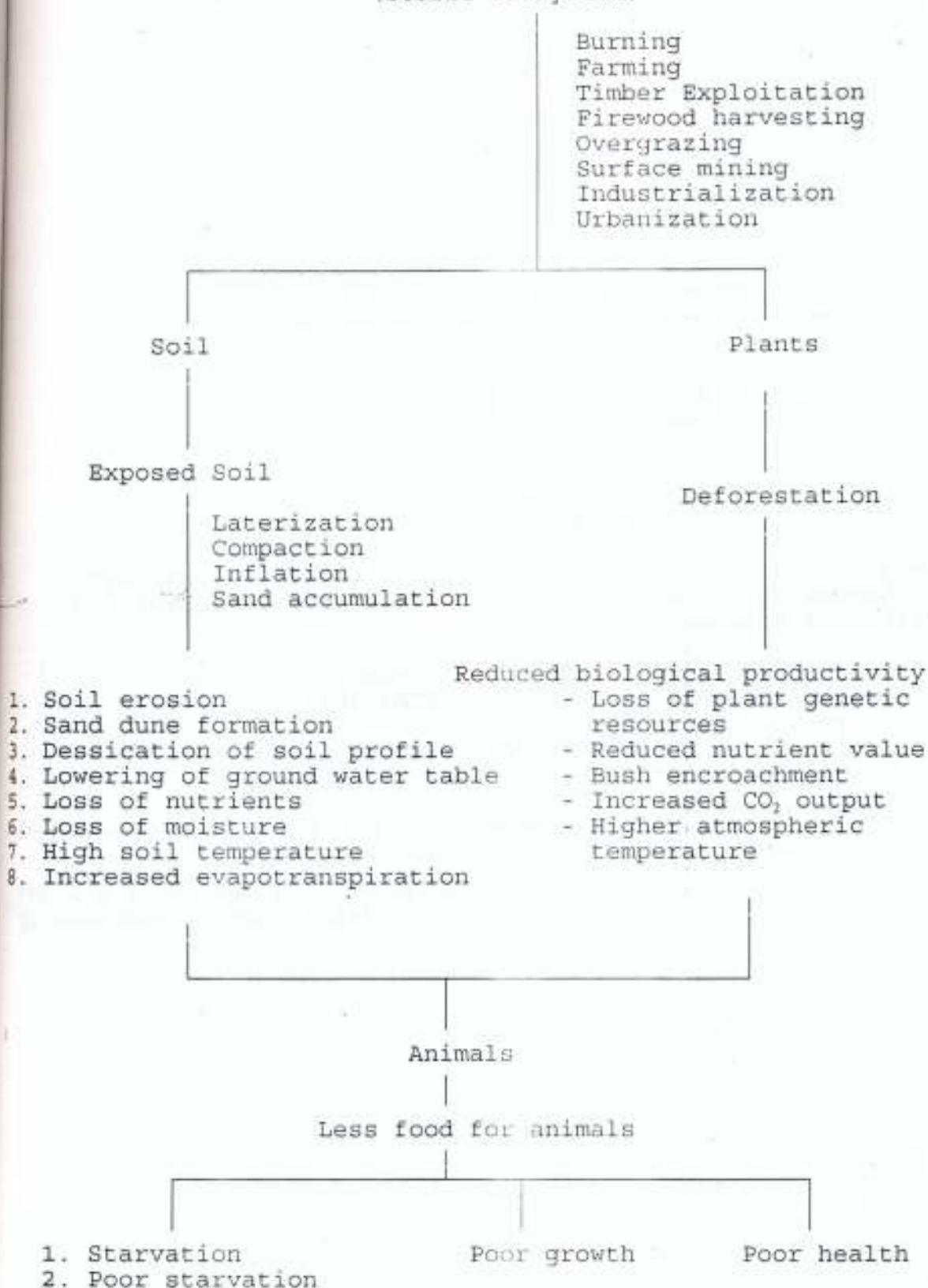
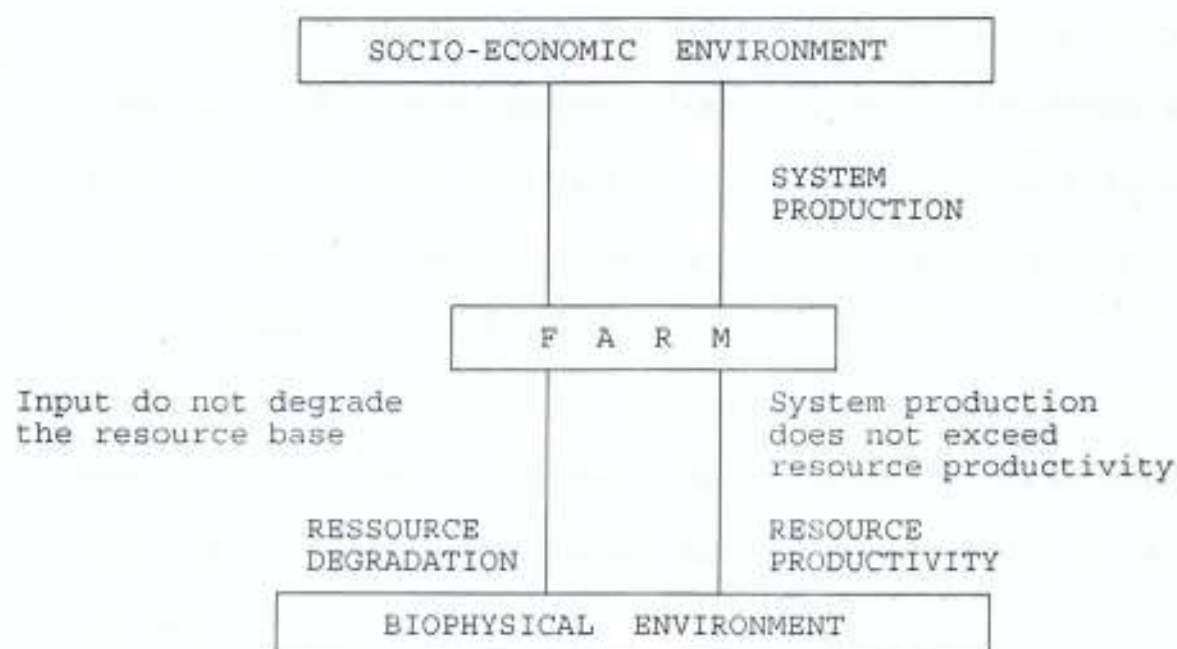


Fig. 2.1 Ecological Consequences of Mismanagement of Tropical Forests
Source: Ola-Adams (1992)



Resource degradation does not exceed resource productivity

Fig. 2.2: Sustainable Land Use System
Source: Hart and Sands (1991)

2.7 LAND USE PRACTICES IN NIGERIA

The major land use practices that have contributed largely towards the instability of ecosystem and deteriorating environment include: Agriculture, industrialization, urbanization, grazing and over exploitation of plant and animal resources (Ola Adams 1992).

Changes occur slowly in soil under natural vegetation cover. There is equilibrium. Soil fertility declines at a rate dependent on the intensity of disturbance. Cultivation, deforestation, industrialization and urbanization involve the removal of vegetative cover, consequently the soil is exposed to climatic elements as a result of these human activities. This exposure of the bare soil accelerates the rate of geomorphological and pedological processes leading to erosion and loss of nutrient. Loss of nutrient may be attributed to drop in soil organic matter content, soil erosion and leaching of plant nutrients.

In 1983, regional aggregate for 38 countries in sub saharan Africa showed that net removal were 22 kg of nitrogen 6 kg of phosphorous and 23 kg of potassic estimate for the year 2000 loss of 28 kg of nitrogen, 7.5 kg of phosphorous and 23 kg of potassium were estimated (Smaling and Stoovogel 1990). If the loss of nutrient continues without much improvement in land management, the process of nutrient depletion will become more acute each year with the consequent decrease of biological productivity.

The exploitation of the forest ecosystem has not only resulted in changes in distribution, species composition and genetic structure but have

caused the extinction or near extinction of many tree species and other potentially useful plants and animals. However, selective logging of natural forest, strict controlled, may mimic natural disturbance which the forest have learnt to live with (Cenfield 1983). Tree density decrease with increase in intensity of logging, compared with 41% mechanized logging (Abdulhadi et al 1981).

Deforestation contributes about 20% of the carbon dioxide being added to the atmosphere and is increasing with increasing deforestation (Flavin 1989). Burning of biomass fuel also emits carbon conversion of woodlands to managed grasslands whether pasture or cereal crop reduces the amount of carbon in the standing crop of vegetation from 10 - 15 kg of carbon per square metre to about 1 - 3 kg c/m (Holgate 1987). This therefore releases substantial carbon into the atmosphere. The carbon dioxide tends to absorb the heat of solar energy in the same way that glass traps heat in a glass house, allowing temperatures to build up.

The pattern of land use in a country is a reflection of its cultural evolution. Consequently the pattern of land use of many country has to be viewed as a dynamic process. Unfortunately the current pattern of land use and development planning in Nigeria does not reflect the recognition of wildlife conservation outside a government owned reservation. The large herds of Fulani cattle grazing in the Northern part of Nigeria make it difficult to find suitable areas for wildlife conservation in the North except those lands owned by Federal or State Government (Adeola 1983).

Pressures on reserved lands are expected to increase. The rate of annual population growth is generally high (3%) and the man land ratio may be expected to grow as fast with improved medical services and increasing

life expectancy. At the same time the pattern of land ownership is changing. Communal ownership of land and wild animal with related taboo and customary laws are breaking down and being replaced by statutory laws and law enforcement systems. Land is being individualized following the pattern of Western European and American models (Adeola 1983).

Nigeria has 9.8% of its land under some form of conservation. Forest reserves constitute the larger part of the officially conserved areas while game reserves and the national park form about 3% (Afolayan 1980; and Adeola 1983). Myers (1982) confirmed that land use decisions will be highly influenced by economic criteria. Government's indecision on the position of wild animal in the public pattern of land use is related to economic factors.

Abel (1976) found that incompatible forms of land use were and still are spreading into what were hitherto strongholds of wildlife.

2.8 IFON GAME RESERVE

Ifon game reserve can serve as a sanctuary for endangered plant and animal species which are peculiar and unique. The reserve also serves as the custodian of the few relics of high forests in Nigeria. These relics of high forests must be preserved for the sake of posterity (Afolayan and Agbelusi 1992). Ifon game reserve will serve as a safe breeding ground for rear and endangered animal species such as yellow backed duiker- *Cephalophus syvicutior*, sitatunga-*Tragelaphus spekii*, leopard-*Panthera pardus*, white throated monkey- *Cercopithecus spp*, Chimpanzee -*Pan-troglodytes*, Forest elephant- *Loxodonta africana africana* and forest buffalo- *Syncerus caffer*.

A check list of birds in Ifon Game Reserve is given in Table 2.2.

TABLE 2.2 CHECK LIST OF BIRDS IN THE PROPOSED IFON GAME RESERVE

Phasianidae	
Crested Guinea fowl	<i>Gutters edouardi</i>
Forest Francoline	<i>Fringolinus lathami Hartlans</i>
Forest	
Rallidae	<i>Gallinula flarirosta swainson</i>
Black Crake	
Charaelidae	
White-headed plover	<i>Xiphidispterus albicops</i>
Forbes plover	<i>Charadriusu foubosi</i>
Wattled plover	<i>Afribyx seneqallus (L)</i>
Musophahidae	
Ross's Turaco	<i>Musophaga rossie</i>
Plantain eater	<i>Grinifer zonurus</i>
Psittacidae	
Grey parrot	<i>Psittacus erithacus</i>
Fisher's lovebird	<i>Agapornis fishbarts</i>
Columbidae	
Green pidgeon	<i>Treron austrails</i>
Emerald spotted wood dove	<i>Turtur chalcospite</i>
Laughing dove	<i>Steptopelia senegalensis</i>
Ring-necked dove	<i>S. capicala</i>
Scopidae	
Hammerkop	<i>Scopus umbretta</i>
Cuculidae	
Senegal coucal	<i>Centropus senegalensis</i>
Common cuckoo	<i>Cuculus cariorus</i>
Whitbrowed coucal	<i>Centropus supercilion</i>
Aegypediae	
Palmnut vulture	<i>Gypohierax angolensis</i>
Ruppoll's griffon vulture	<i>Cz. ruppellilis</i>
Hooded vulture	<i>Necrosyrtes monachus</i>

Source: Afolayan and Agbelusi 1992.

TABLE 2.3 WILD ANIMAL SPECIES IN RELATION TO VEGETATION TYPES IN IFON GAME RESERVE

<u>SPECIES</u>	<u>Forest</u>	<u>Savanna</u>	<u>RIVERINE</u>
Elephant	+	+	+
Bush pig (red riverhog)	+	-	+
Bush buck	+	+	+
Buffalo	-	+	+
Galago	+	-	+
Black duiker	+	-	+
Maxwell's duiker	+	+	+
Yellow backed duiker	+	-	+
Red flanked duiker	+	-	+
Grey duiker	-	+	-
Patas monkey	-	+	-
Green monkey	-	+	+
Mona monkey	+	-	+
Mangabey monkey	+	-	+
Mongoose	-	+	-
Grasscutter	-	+	+
Tree hyrax	+	+	+
Hartebeest	-	+	-
Chimpanzee	+	-	-

Source: Afolayan and Agbelusi (1992)

Ifon Game Reserve is the major nature reservation area in this region and has a lot of potentials. If encouraged it will provide a good avenue for protection of biodiversity and a base for the development of Nigerian ecotourist industry (Adeyemo 1995).

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 STUDY AREA

Ifon Game Reserve is the study area.

Ifon Game Reserve is the amalgamation of various units of high forest areas within Owo and Okelusi forest Reserve which are situated in Owo Division (now Ose and Owo Local Government Council area) of Ondo State (Afolayan and Agbelusi, 1992).

Ifon Game Reserve is situated between latitude 6° and $40'$ and $7^{\circ} 15'$ N and longitude 5° and $5^{\circ} 55'$ E. It was established on the 1st of May, 1930, vide gazette notice No. 24; order 15, after the preliminary notice No. 211; gazette No. 26 of October 25th 1926. It had been further gazetted in 1937, 1941 and 1951 with amendments. Figure 1.0 shows the Ifon Game Reserves position in Nigeria amongst other proposed National Parks (UNESCO, 1994) while Figure 3.1 indicates its position in Ondo State.

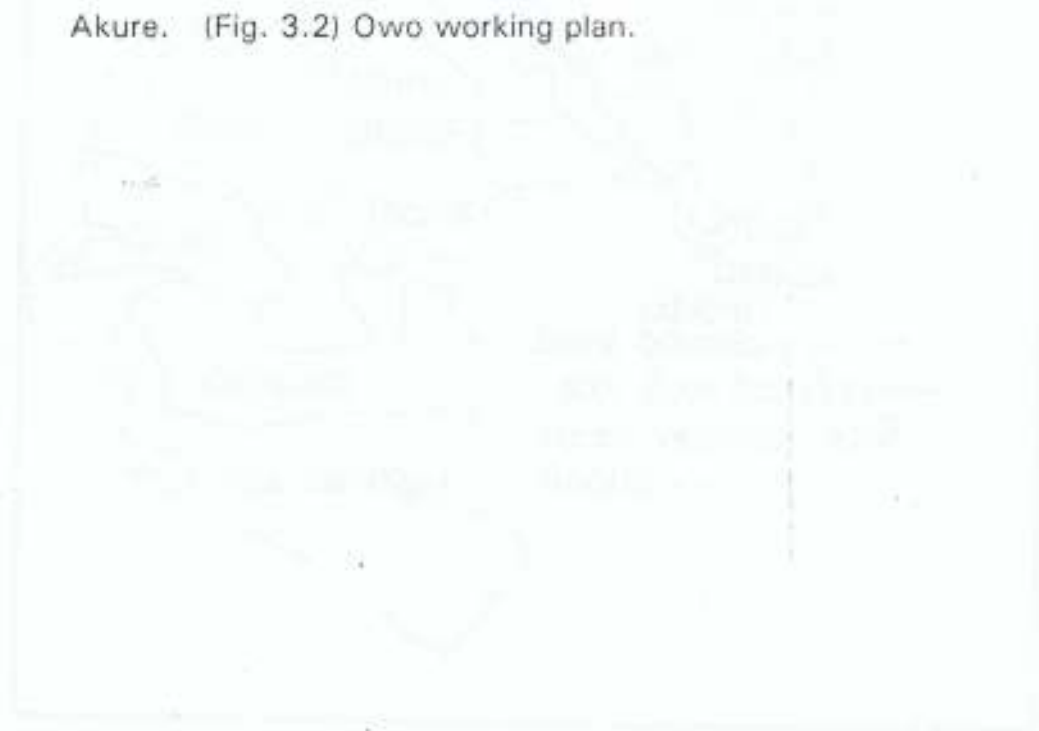
Ifon Game Reserves has a total land area of 282.70 km^2 . The new Ipele-Idoani express road cuts the reserve northwest from Uwesese River, almost parallel to the old road across little Osse river which is the northern boundary of the reserve partially separating about 52 hectares to the Northwest portion. The whole area is made up of the following vegetation types:

The high forest - 150.22 km^2

The savanna forest - 132.48 km^2

The 282.70 km² area of the reserve represents 8.4% of the total area of all forest reserves in the then Ondo State (out of which Ekiti State has been created). The reserve is bordered in the South and Southwest by the Akure-Benin express road, in the East by the Big Osse River and partly by Asaboro rubber plantation at the Southeastern portion, and in the West by the Ipele-Idoani express road.

The Game Reserve is about 20 km from Owo at the Ipele end, 6 km from along Ipele-Ifon road and about 80 km from Benin-City and 80 km from Akure. (Fig. 3.2) Owo working plan.



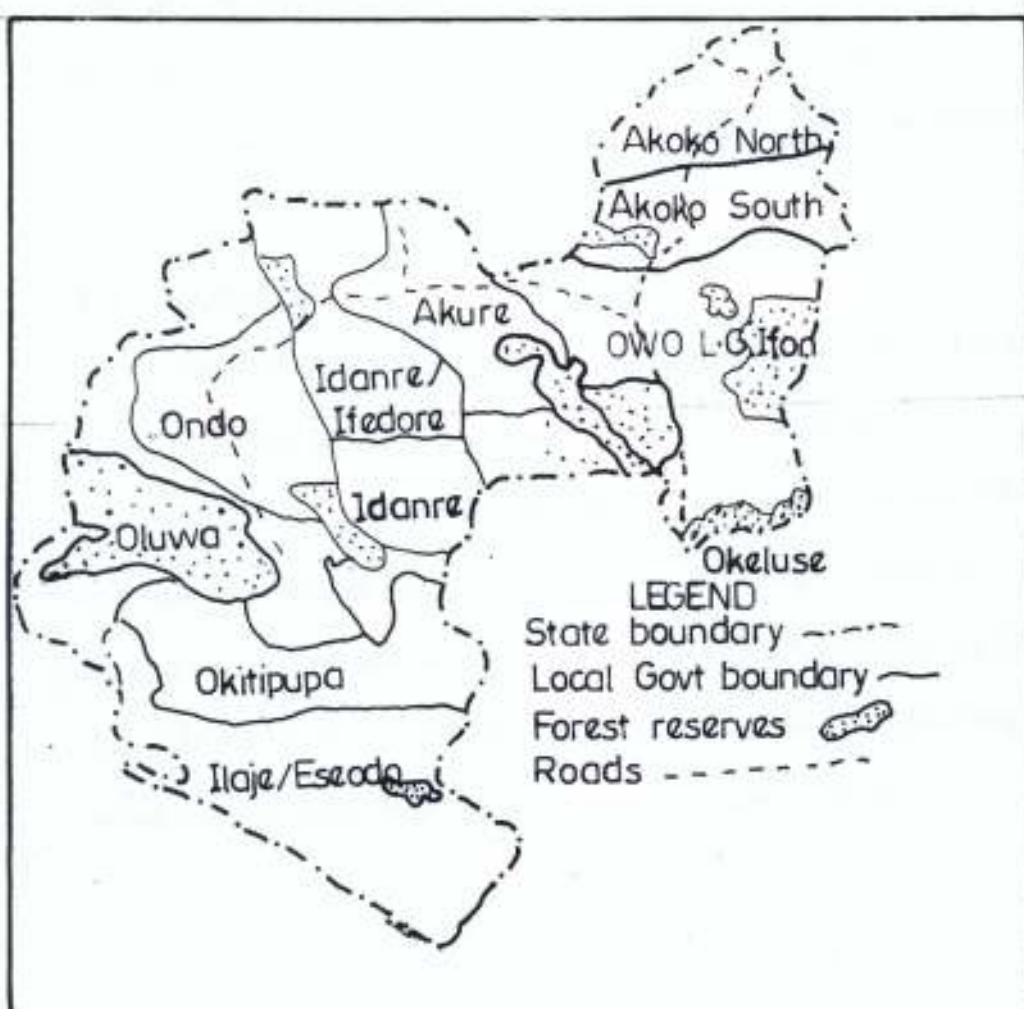


FIG. 3.1: MAP OF ONDO STATE SHOWING FOREST RESERVES

Source: Fatoba, 1991.

3.2 TOPOGRAPHY AND DRAINAGE

The terrain of the study area is gently undulating. The reserve is drained by six important rivers; they are big Osse, little Osse, Uwesse, Okua, Oroken and Omo. Only big Osse is permanent, others tend towards semi-permanent to seasonal, it is therefore possible to retain animals in the reserve throughout the year because of water availability at all season, if proper protection is accorded to the area (Afolayan *et al*, 1990).

3.3 CLIMATE

The climatic data of Owo is about the best available, it is about 20 km away from the first point of contact with the reserve.

The mean annual rainfall is about 1400 mm. Usually the wet season spreads over seven months, from April to October, while the dry seasons spreads over the remaining five months from November to March (Table 3.1). The difference between the diurnal ranges of temperature and relative humidity are quite minimal. This favours game viewing.

TABLE 3.1: MEAN METEOROLOGICAL DATA FOR OWO.

	Ja n	Fe b	Ma r	Ap r	Ma y	Ju n	Jul	Au g	Se p	Oc t	No v	Dec
Rainfall (mm)	8	33	93	12 3	16 0	16 3	19 3	15 5	24 5	13 3	43	23
AG Temp. (°c)	31	29	28	25	26	23	23	25	27	26	39	303 0
Relative Humidity (9,00hrs)	78	77	81	83	84	56	91	90	88	83	81	79

Source: Afolayan and Agbelusi (1992) Wildlife Inventory of Ifon game Reserve.

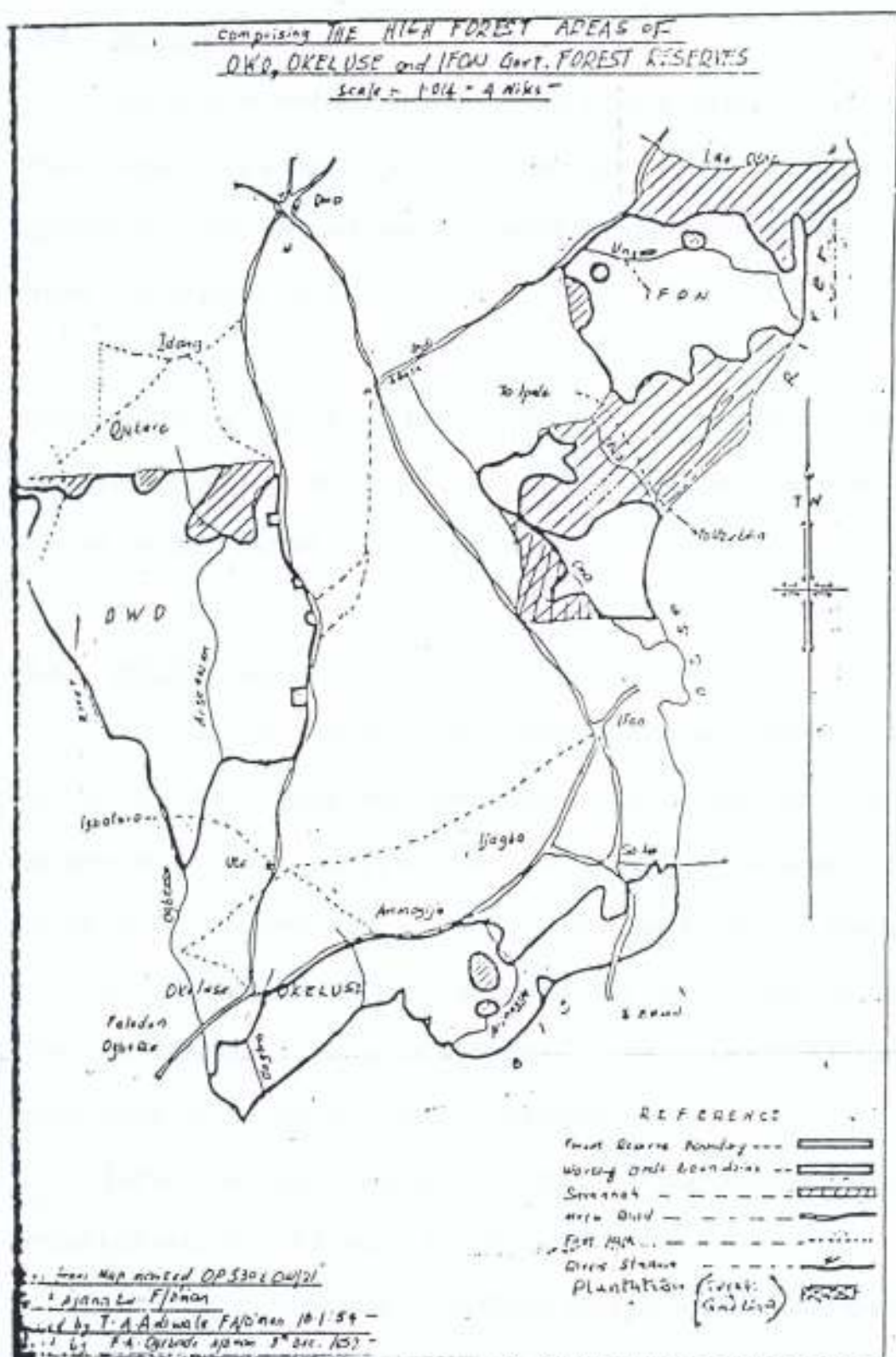


FIG. 3.2: Owo Working Plan

Source: Fatoba, 1991

3.4 SOILS

The soils in the reserve are derived from quartzite rocks, which in many places have a high mica content (Campbell, 1961). The proportion of good soils in Owo area is lower and that of very poor soil is higher than any other area in Ondo State.

The soil of the derived savanna is very sandy tending towards gravelly. the location of the quarries adjacent to this reserve, along Ipele-Ifon road further confirm this assertion. Broken canopies within the reserve expose to some extent, the rock outcrops.

3.5 VEGETATION

The vegetation of Ifon Game Reserve can be classified into the tropical rain forest (high and rainforests) which covers 150.22 km² the savanna woodland including the forest/savanna mosaic area (savanna forest) which covers the remaining 132 km² and the riverine forest, this can be found along the courses of the major rivers that flow through the reserve. The riverine forest is said to be embedded in the tropical rain forest. All these make up the natural types of vegetation.

The artificial type of vegetation resulted from plantation establishment embarked upon by the Forestry Department in 1962.

Major vegetation types in the Game Reserve is shown in Figure 3.3.

TABLE 3.2: DOMINANT TREES IN THE FOREST AREA OF
THE IFON GAME RESERVE

ECONOMIC TREES

Milicia excelsa (formerly *Chlorophora excelsa*)

Diospyros mespiliformis

Pterocarpus osun

Persia africana

Manssonia altissima

Albizzia zygia

Gauarea cedrata

Tetapluera tegaptera

Dialium guinense

Ceiba pentandra

Daniellia ogea

Fagara liprieuri

Holoptelia grandis

Pipterdeniastrum africanum

Alstonia sp.

Antiaris africana

Sterculia rhinopetalla

Khaya gradifoliola

Brachystegia sp.

Richinodendron heudelottii

Chrysophyllum albidum

Bombax species

Terminalia ivorensis

Terminalia superba

SOURCE: UNESCO, 1994

3.5.1 High forest vegetation type

The high forest vegetation type have emergent trees which range from 15m to 20m in height. They have thin barks, the feature which makes them intolerable to fire by the evergreen with tree orchids, and canes which results in dense tangle. The forest floor is fairly open with a shallow layer of decomposing leaves and rotten branches covering the mineral soil in most parts. The types of vegetation is prominent at the south eastern and south western parts of the reserve. It is estimated to account for about 4% of the total vegetation. The area is drained by the Omo river.

It is because of the luxuriant flora species that the forest and Game Reserve management often have to deal with the illegal and legal exploitation by taken them to court.

The luxuriant vegetation acts as a water shed for the river Omo and should be protected.

Dominant trees of Economic values in the forest area are shown in Table 3.2, while some of the ground flora are shown below.

Chaesaalia kolly

Carpolobia lutea

Culcasia sp

Geophila ebvallata

Landolphia sp (amber)

Pteris sp

Iccacinia thonningu

Paliseta hirsuta

Draceana surculosa

Lamariopsis guineense

Rothmannia sp (dimber)

Asystasia sp

Rinorea brachytela

The rain forest extends across the central part of the reservoir northwards just after Uwessee river, it accounts for about 40% of the total land area as shown in Figure 3.3.

3.5.2 Savanna Vegetation

The savanna vegetation is also rich in various plants. the trees are below 15 m in height and are able to serve fire due to their thick corky barks. Grasses which are virtually absent from both high forest and rain forest dominate the ground layer. The derived savanna could have resulted mainly from human interference with the rain forest (Fatoba 1991). Another possibility is that, it came into existence as a result of edaptive and climatic factors. However, Ifon indigence are mainly farmers and hunters and make use of fire as an important daily tool in discharging their duties. It is hereby safe to say that areas like the high forest and rain forest still exist due to the fact that man's exploitation rates there is not yet at peak.

Dominant woody plants in the savanna are highlighted in Table 3.3 and herbs present in the reservoir are enumerated in Table 3.4.

Table 3.5 shows the list of woody tree species in the reserve. It is somehow sandwiched by both the high forest and rain forest. It also accounts for about 48% of the total land area as shown in Figure 3.3.

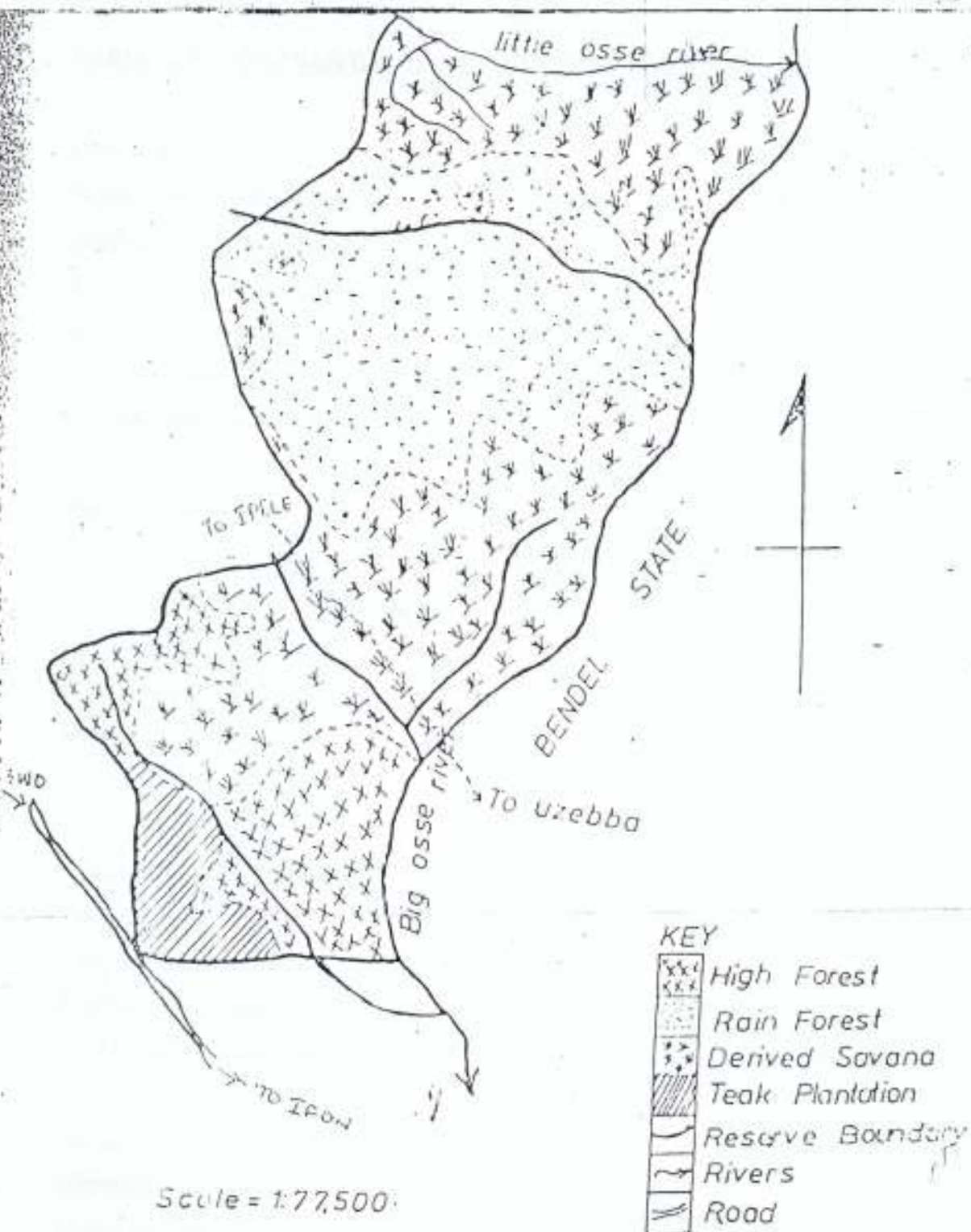


FIG. 3.3: MAP SHOWING THE MAJOR VEGETATION TYPES IN IFON GAME RESERVE.

Source: Fatoba, 1991.

TABLE 3.3 DOMINANT WOODY PLANTS IN THE SAVANNA

Khaya senegalensis
Peterocarpus erinaceus
Butyrospermum paradoxum
Terminalia macroptera
Entanda africana
Vitex domiana
Malanchanica alnifolia
Millettia thonningii
Parkia biglobosa
Acacia drepanolobium
Croton tiglium
Borassus aethiopicus
Lophira lanceolata
Prosopis africana
Trema orientalis
Cussonia nigerica
Securidaca longipendiculata
Tephrosia spp.
Annona senegalensis
Bridelia feruginea

VERY CONSPICUOUS DOMINANT WOODY PLANTS IN THE SAVANNA

Milicia excelsa
Diospyros mespiliformis
Mansonia altissima
Ceiba pentandra
Chyrophillum albidum
Spondias mombin
Triplochiton scleroxylon

TABLE 3.4 HERBS ENUMERATED IN THE RESERVE

Aspilia africana

Mucunna spp.

Eupatorium racemosum

Andropogon gayanus

Andropogon textorum

Pennisetum purpureum

Pennisetum pedicellatum

Centrosema species

Indigofera spp.

Pandaca involucreta

Pennisetum polystachion

Hyperthelia dissoluta

Hyperthelia subplumosa

Eragrostis spp.

Polygonum spp.

Echinochloa stegnina

Chloris consimilis

Sporobolus spp.

Hyperthelia involucreta

Source: Atolayan and Agbelusi 1992

TABLE 3.5 LIST OF WOODY SPECIES IN IFON GAME RESERVE

SPECIES	FAMILY
<i>Baphia nitida</i> <i>Pterocarpus</i> sp <i>Erythrina</i> sp <i>Milleta thonningii</i> <i>Lonchocarpus</i>	<i>Papilionaceae</i>
<i>Piliostingma thonningii</i> <i>Dialium guineense</i> <i>Distemonanthus benthamianus</i> <i>Brachystegia</i> sp <i>Alzelia</i> sp <i>Daniellia diveri</i>	<i>Caesalpinaceae</i>
<i>Amblygonocarpus andongensis</i> <i>Albizia</i> sp <i>Parkia biglobosa</i> (P. cladertoniana) <i>Entanda africana</i> <i>Tetra pleura tetraptera</i> <i>Piptadeniastrum africanum</i>	<i>Mimosaceae</i>
<i>Celtis</i> species <i>Trema orientalis</i> <i>Holoptelea grandis</i>	<i>Ulmaceae</i>
<i>Ficus</i> species <i>Milicia</i> (formerly <i>chlorophora excelsa</i>) <i>Antiaris africana</i> <i>Treculia africana</i> <i>Bosquia angolensis</i> <i>Myrianthus arboreus</i>	<i>Moraceae</i>
<i>Strombosia putulata</i> <i>Olax subscorpioides</i>	<i>Olacaceae</i>
<i>Fagara</i> sp	<i>Rutaceae</i>
<i>Hannoa klaineana</i>	<i>Simaroubaceae</i>
<i>Irvingia</i> sp	<i>Irvingiaceae</i>
<i>Canariumschweinfurthii</i>	<i>Burseraceae</i>

TABLE 3.5 CONTINUED.

SPECIES	FAMILY
<i>Khaya senegalensis</i> <i>Khaya grandifoliola</i> <i>Trichilia species</i> <i>Guarea cedrata</i> <i>Entandrophragma angolensi</i>	<i>Meliceae</i>
<i>Allophylus africanus</i> <i>Paulina pinnata</i> <i>Blighia sapida</i> <i>Lecaniodiscus cupanioides</i>	<i>Sapindaceae</i>
<i>Spondias mombin</i> <i>Lannea species</i>	<i>Anacardiaceae</i>
<i>Cussonia nigerica</i>	<i>Araliaceae</i>
<i>Diospyros species</i>	<i>Ebenaceae</i>
<i>Butyrospermum paradoxum</i> <i>Malacanta alnifolia</i> <i>Chrysophyllum albidum</i>	<i>Sapotaceae</i>
<i>Gardenia sp.</i> <i>Rothmannia sp.</i> <i>Naudea latifolia</i> <i>Crossoptery febrifuga</i> <i>Canthium species</i>	<i>Rubiaceae</i>
<i>Kigelia africana</i> <i>Stereospermum kunthianum</i> <i>Neubouddia laevis</i>	<i>Bignoniaceae</i>
<i>Dracaena species</i>	<i>Agavaceae</i>
<i>Elaeis guinnensis</i> <i>Phoenix reclinata</i> <i>Borassus aethiopicum</i>	<i>Palmae</i>
<i>Ceilba pentandre</i> <i>Bombax species</i>	<i>Bombacaceae</i>
<i>Cola gigantea</i> <i>Other cola species</i> <i>Triplochiton scleroxylon</i> <i>Mansonia altissima</i>	<i>Sterculiaceae</i>
<i>Combretum sp.</i> <i>Terminalia glaucescens</i> <i>Other terminalia sp.</i>	<i>Combretaceae</i>
<i>Vitex species</i>	<i>Verbenaceae</i>

SOURCE: UNESCO, 1994.

3.5.3 The Riverine Vegetation Type

The riverine vegetation is situated along the major rivers particularly the Big Osse River. the inundated nature of the soil support the growth of ceiba pentandra, Nauclea diderrichii, Terminalia ivorensis Raphia vinicifera. At the open spaces are polygonium sp, Echinochloa setignima and chloris consimilcs.

3.5.4 Plantation

Tectona grandis and Gmelina arborea plantation was established in the reserve in 1962. It was situated at the South-eastern tip of the reserve where it touches Ipele-Ifon road.

The plantation was partially successful and covered an area of 4 km² representing about 1.4% of the total area.

3.6 FAUNA

Table 2.3 shows the major animal species in relation to the vegetation types in the Game Reserve are shown in Table 2.3.

Table 2.2 present the most dominant species of Birds in the Ifon Game Reserve.

The most recent inventory was carried out by Afolayan and Agbelusi(1992) using the methods of:

- (1) Footprints, trails, tracks, counting of holes and dropping.
- (2) Visual observation.
- (3) Market survey.
- (4) Information from hunters.

Some of the animal enumerate are shown in Table 3.6 (UNESCO 1994).

Methodology

The methods used in data collection were:

- (1) Oral interview
- (2) Questionnaires
- (3) Direct observation.

(a) Oral Interview Method

The whole park was divided into six regions based on the different ecological zone of the area. This was to enhance effective coverage of the reserve. Therefore, data were collected in the following villages in and around the reserve at different ecological zones: Ago alo, Ijagba, Idoani, Ofale, Okelusi, Ikare and Ago daji. Selection of the study sites was done to satisfy the 1-5 percent study sites for ecological studies as suggested by Hopking 1976

The interview was conducted among the members of the community. A total of 300 adults which was made up of male and female were interviewed in each of the selected villages.

(b) Questionnaire Method:

Structured questionnaire were administered among the residents in the six villages selected. Efforts were made to assist those who could not fill the forms as many of them could not read or write. A total of 300 questionnaires were distributed in the villages. Equal number of men and women of different profession and ages were used. The forms were not

allowed to stay for more than 24 hours with them. A copy of the questionnaire is in the appendix.

(c) Direct Observation

A total of 10 trips were made into the reserve in the selected regions to observe the impact of human activities within and outside the reserve. In each of these places, the nature of human activities were recorded. Photographs of sites, objects, features, residents, floral and fauna were taken where necessary.

DATA ANALYSIS

All data collected were subjected to percentage distribution ranges and Duncan (1955) multiple range test for interpretation. Graphical representation were also used when necessary for further explanation.

CHAPTER FOUR

RESULTS

Table 4.1: ESTIMATED POPULATION OF SOME SELECTED VILLAGES IN
AND AROUND IFON GAME RESERVE

Name of Village	Estimated Population
Ago Alao	2400
Ago daji	4210
Ijagba	1210
Ofale	612
Idogun	231
Elegbeka	866
Ikaro	1300

Table 4.1 shows the estimated population of some selected villages in Ifon Game reserve. It is apparent that population of these villages is not static as it varies with season. During the dry season, a period that could be described as off season for agricultural production, most young men and women often move to the urban centres to seek menial jobs at construction sites, industries, hotels etc.

The population structure can be described as that of having more of the old and infants and least of the youth. That is the working class are fewer in Nigeria. However, at the onset of raining season, the young men and women move back to the villages for land preparation for the planting season.

TABLE 4.2: PROXIMITY OF SOME SELECTED VILLAGES TO THE RESERVE.

Name of Village	Estimated Distance From
Ago Alao	Within
Ago daji	Within
Ijagba	Around
Ofale	Within
Idogun	Around
Elegbeka	Around
Ikaro	Within

Key:

Within = Villages inside the reserve.

Around = Villages within 500metres from the reserve boundary.

Table 4.2 shows the proximity of the selected villages to reserve. It shows that a large population of human beings are residing in the reserve illegally. Within and around the reserve they carry many activities such as farming, trading, mining, poaching, logging, burning that are injurious to the environment. This destroys the wildlife habitat thereby posing a serious threat to basic objectives for which the reserve was established.

TABLE 4.3: OCCUPATION OF RESIDENTS IN AND AROUND IFON GAME RESERVE

Name of Village	Main Occupation
Ago Alao	Farming and Trading
Agodaji	Farming, hunting
Ijagba	Farming, hunting, logging
Ofale	Farming, fishing, Quarry mining
Idogun	Farming, hunting
Elegbeka	Farming, fishing
Ikaro	Farming, fishing.



Plate I: Illegal logging in Ifon game reserve

Table 4.3 shows a list of the main occupation of the residents of Ifon game reserve. The list shows that farming is the major occupation of the residents. In addition to farming, those villages near the Osse River that runs through the length of the reserve are also engaged in fishing. For instance, residents in Amu, Ikaro, Ofale are engaged in fishing. Ago Alao is a village at the main road located at a junction. Therefore, it forms a good location for market. A high percentage of residents are engaged in trading. They buy goods in nearby villages and bring to the market on the market days. However, apart from selling in the local markets in the villages, many of them used to take their proceeds to nearby towns like Ifon, Ipele, Uzeba or Sobe for sale.

The professional hunters sometimes take their kill to the urban centres in Owo or Akure where they are sold in the hotels or restaurants at high prices. Some could sell in the village markets to middlemen who in most cases come from the town to villages during the market days.

Quarry mining, was noticed in Ofale during the study. Some villagers were engaged in mining gravel in the reserve in Ofale. The gravel and sand stones are carried to the urban centres for the construction industries.

Moreover, extensive rearing of livestock such as goat, sheep, cattle and poultry was apparent. These animals were seen moving up and down the villages in large numbers. The ruminants such as sheep and goat were seen moving into the reserve grazing the grasses and browse plants.



Plate II: Illegal gravel mining in Ifon Game reserve



Plate III: Illegal animal rearing within Ifon Game reserve

**TABLE 4.4: LIST OF THE MAIN AGRICULTURAL CROPS PRODUCED IN
SOME SELECTED VILLAGES IN THE RESERVE**

Name of Village	Agricultural Crops	
	Cash	Food
Ago Alao	Cashew, cotton, cocoa	Cassava, Maize
Agodaji	Cashew, cotton	Yam, melon, maize
Ijagba	Cashew, cotton	Cassava, Yam, maize
Ofale	Cotton, Cashew	Cassava, Yam, Maize
Idogun	Kolanut, Cocoa	Melon, Maize, Yam
Elegbeka	Cotton, Cashew	Cassava, Maize, Cocoyam
Ikaro	Cashew	Cassava, Maize, Yam

Table 4.4 shows a list of the main agricultural crops produced by farmers in the selected villages. A high percentage of the farmers in the reserve are specialized in food crop production. Occasionally, some also produce cash crops like cotton, cashew, kolanut and cocoa, proceeds from their farm are sold in the cities where there are ready markets. Sometimes the middlemen may come to the village market or meet the farmers on their farm to buy the farm produce. Food crops are seldom sold to villagers as each one produces for himself and his family.

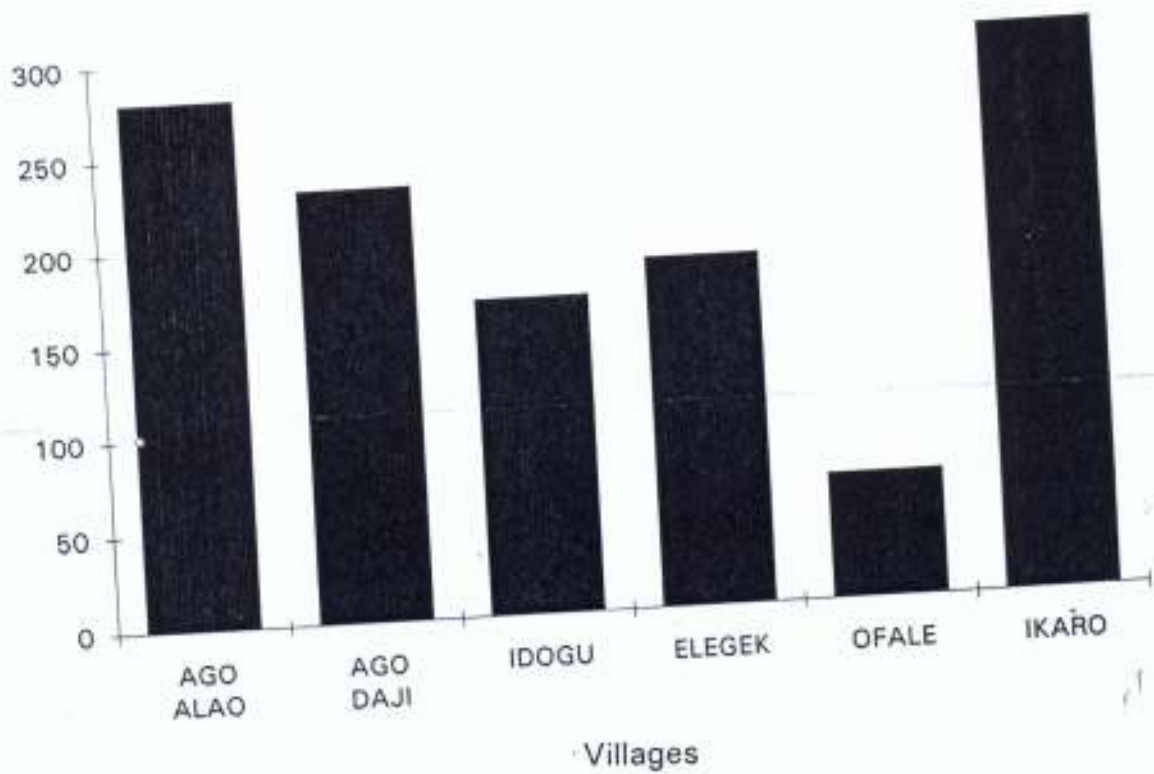


Fig. 4.1: Average Total Number of Poachers Arrested Between 1992 - 1997

Figure 4.1 shows the graphical representative of the number of poachers caught in the selected villages in the past five years. The figure shows that the rate of poaching is generally high in the reserve. The graph also shows that poaching is generally higher in those villages located within the reserve. This shows that poaching was a function of the distance of the village to the reserve. There were reports of frequent physical combats between the game guards and poachers.

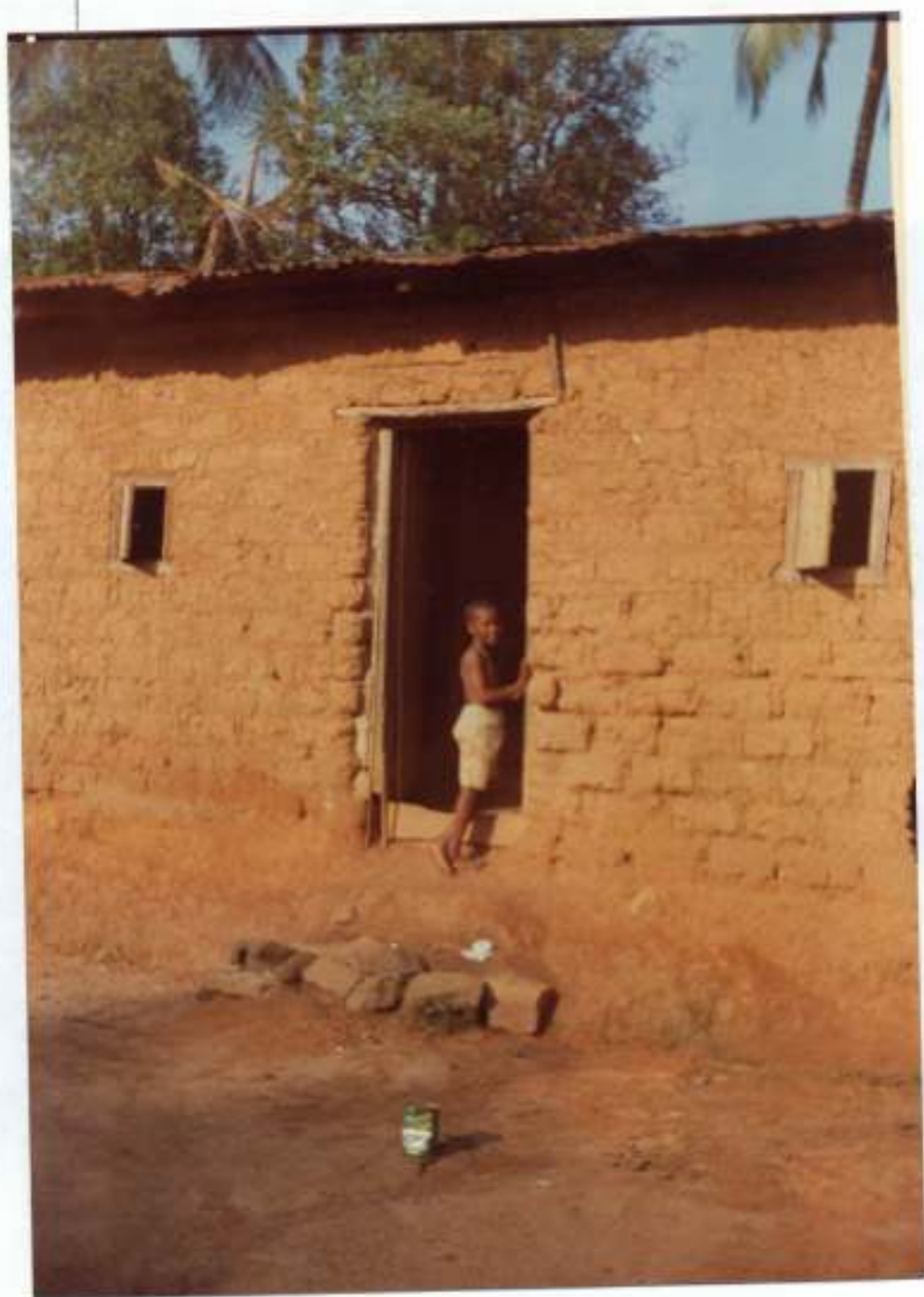


Plate IV: Illegal occupation in Ifon Game reserve



Plate V: Farming activities in Ifon Game reserve

CHAPTER FIVE

5.0

DISCUSSION

Table 4.1 shows the estimated population of some villages in and around Ifon game reserve. The population of the area is not constant, it varies with the season of the year. It is directly related to raining seasons. During the raining season the youth who are engaged in farming, are found in the villages, but as soon as the dry seasons comes many of them migrate to the urban areas where they are engaged in menial jobs in the construction sites, industries and hotels (Adewole 1990).

The population structure shows that infants group between 0-20 years are the highest followed by the adults of between 40-50 years. Those between 60-70 years who can be referred to as old age are of a fairly high percentage. However, those within the age bracket 21-39 years are least in the population structure. This result is in agreement with the findings of Pearce (1986), Roland (1991) that there is a sporadic drift of the working class from the rural areas to the urban areas where the basic amenities are abundant and where they can easily obtain white collar jobs. This observation clearly describes population dynamics in Nigerian rural-urban areas. And it can be described as one of the greatest problems facing agricultural production in Nigeria (Famoriyo 1979).

Table 4.2 shows the proximity of the villages to the game reserve. It is apparent that a substantial part of the reserve is still occupied illegally by human beings. There is a stipulated distance from the park at which human activities are allowed in game Reserves and National Parks

(Desmonds 1981). Illegal occupation in game reserves and National parks is a serious problem in Nigeria. For instance, farmers cultivate in the reserve land because of the high organic matter content that render the land relatively more fertile, while the nomadic cattle Fulanis graze their animals illegally because of the abundance and richness of the reserve pasture (Ayodele, 1988). The resultant effect of this is greivous, as it can lead to a spread of diseases and parasites from livestock to wildlife in the reserve and a terrible destruction of agricultural farms (Adeyemo, 1992).

Table 4.3 shows the occupation of residents in and around Ifon game reserve. The list shows that farming is the major occupation of resident. In addition to farming, most of the men in the villages also engage in wildlife hunting. In fact, most of the men have dane guns and rifles which they use for hunting. Apart from guns they also set traps in different parts of the reserve (Ajayi, 1979).

A substantial part of the farm produce are carried to the urban centres for sale; only a fragment are sold locally in the village. The professional hunters sometimes carry their kill to the urban areas for sale, some may decide to sell to the middlemen who came regularly to the villages for this business (Ajayi 1979).

Fishing was also an important occupation of these residents who live along River Osse bounds. Various methods were used for fishing. They include: net, hook and chemical. However, the professional fishermen do not use chemicals for fishing. School children and some farmers occasionally secretly use them to make easy kill.

The fishes are either smoked or sundried to increase the shelflife (Agbebi 1998). The dried fishes are carried to urban areas for sale. However some unsmoked or smoked fish could be sold in the village depending on the situation.

Moreover, the result also show that logging was conspicuously carried out in the reserve in some villages. The villages make arrangement with big time loggers from towns who sometimes come down with their vehicles to cart away timbers illegally (ACNP, 1981). This activity has greatly resulted in habitat destruction, whereby the animals either die or migrate to other regions. This is in agreement with the findings of Rossel and Dorothe (1987) that habitat destruction is the most important factor threatening the existence of wildlife in their environments.

Table 4.4 shows the list of major agricultural crops produced by farmers in Ifon game reserve. It is clear from the table that the farmers produce both the cash and food crops. The cash crops are carried to urban centres for sale. However, the middlemen sometimes move down to the villages where they buy the farm produce from the farmers directly on the farms (Adegbola 1983). Majority of the farmers practices subsistent farming producing food crops just enough for themselves and their families. Some do not often have enough for sale (Famoriyo, 1980). Farmers cherish the use of the reserve for their farming operation because of the soil fertility brought about by the high accumulation of organic matter content (Ola-Adams 1992). However, it is unassailable that one of the major problems farmers face on their farms is constant destruction of crops by wild animal

(Asibey 1990, Adeyemo 1992). The result also shows that mining of sand stone and gravel took place in some parts of the reserve. This act does not only pose biological destruction to the reserve, but also a serious health hazards to wildlife as the instruments use could serve as a vector of diseases and parasite. Moreover, the soil structure and texture are destroyed. This will seriously lead to erosion and leaching and more importantly loss of soil fertility (Agboola 1980).

Figure 4.1 shows the average number of poachers arrested in different villages for past five years. The result shows that poaching, activities have been in the increase. The main reason for this could be due to inefficiency of the game guards brought about by inadequate facilities or equipment. It can also be attributed to ignorance or poverty on the part of the villagers who are not fully convinced of the importance of wildlife conservation or because of the poor state of Nigerian economy that drives people into various unnoble acts to get money.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

Ifon game reserve is endowed with various species of wildlife and plants. The topography is plain while the soil is fertile thereby supporting plants of various species which provides shelter and pasture to wildlife.

River Osse runs across the length of the reserve providing water for the wildlife throughout the year. Moreover, the environment could be said to be free from any noticeable outbreak of diseases and parasites. And the climate is fairly pleasant. Therefore, if properly managed the reserve will not only preserve the genetic floral and fauna resources for research and historical values, it will also serve as a tourist centre (Falade, 1994).

However, the continuous encroachment of the reserve by man, may make it impossible for it to meet its objectives. And this will be a great loss to biodiversity conservation being advocated all over the world. And more importantly, it will be a great disservice to the people of this country and more to those of this region since its the only game reserve in this region that can provided the much needed ecotourism for their recreation.

Therefore, the following suggestions are made for solving the problem of human encroachment in the Reserve:

1. Enactment of a strict legislature banning all forms of illegal activities in the reserve.
2. Provision of adequate Fund to the management for carrying out their duties effectively.

3. Provision of equipment to be used by anti-poaching squad for checking poach of activities. When poachers are caught strict penalties should be imposed on them to serve as a deterrent to others.
4. Proper enlightenment campaign and publicity. This should be done by carrying the rural communities along. The local leaders should be adequately involved at every stage. And they should be adequately remunerated for their involvement (Afolayan 1992).
5. Farmers whose farms have been acquired by government should be adequately compensated both in cash and in kind. Reports have shown that most of the illegal occupants have historical claim of ownership of certain parts of the reserve. Since they have been denied of their lands the government should provide them suitable alternatives for their use.
6. In addition to the above Afolayan and Agbelusi 1992 recommended the following for the reserve:
 - i) adequate staffing for immediate protection and management;
 - ii) boundary demarcation;
 - iii) physical development vis a vis access and game viewing roads, patrol camps administrative base camp and nature trails;
 - iv) fire arms and other equipment needed for immediate use, anti poaching campaign and immediate protection of floral, fauna and habitat;
 - v) proposal to develop this reserve to a national park.

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APPENDIX 1

Federal University of Technology, Akure

(F U T A)

Post Graduate Studies (Management)

Dept. of Fisheries and Wildlife Management

Your co-operation will be of tremendous assistance to the study being carried out titled "Land use pattern of Ifon Games Reserve" Ondo State.

Please respond to the underlisted questions.

Mind you, any information given will be treated confidentially.

Answers should be provided in three forms viz:-

- i) Mark " " in the Box provided
- ii) Indicate "Y" for Yes and "N" for No
- iii) Give short answers.

A. Demographic Data

- (1) Age _____
- (2) Religion _____
- (3) Occupation _____
- (4) No of members of family _____
- (5) Village/Town _____
- (6) Sex _____
- (7) Marital Status _____

B. Farming

- (1) How big is your farm? _____
- (2) When did you begin farming _____
- (3) Types of crops (i) _____ (ii) _____ (iii) _____
- (4) How far is your farm to Ifon Games Reserve _____
- (5) How did you get the land?

- (6) State the system you use in clearing your farmland ____
- (a) fire or bush burning _____
- (b) Manual labor _____
- (c) Tractors _____
- (7) Is there any record of wild animal damage to crops or your farm? "Y" "N" .
- (8) What did you do to the Wild Animal?
- (9) Do you use chemicals/fertilizers at all? _____ if "Y" how often?
- (10) Name the type of chemicals that you use _____
- (11) Do you measure the quality of chemicals you use?
If yes, what is the quantity you apply?

Hunting

- (1) Do you hunt animals? "Y" "N"
- (2) Do you know if there is anything like hunting per nut?

- (3) What type of tools do you use for hunting?
(1) Dane gun (2) Gin Trap (3) Bow and Arrow (4) Digging
holes (5) Bush burning (6) Poisoning
- (4) What species or type of animal do you prefer to hunt?
_____ and name the animals you normally kill _____
- (5) What do you do with the animals killed?
(1) Sell (2) Eat (3) Both 1 & 2
- (6) How much can one buy the following animals?
Buffalo..... Grass cutter Giant Rat
- (7) How many times do you hunt per year?
- (8) Season or period of hunting
(1) Dry season
(2) Raining season
(3) Both 1 and 2

D. Culture

- I. Name the local festivals in your area
(1) (2) (3)
- II. Type of bush animals used in the ritual
(1) (2) (3)
- III. What type of ceremonies are required in the killing of bush animals?
(1) Naming ceremony (2) Marriage ceremony
(3) Birthday ceremony (4) Chieftaincy ceremony
(5) Others
- IV. Where do you obtain the animals?
(1) Bush (2) Market
- V. What type of animals are forbidden to be killed or eaten?
(1) (2) (3)
- VI. Give reasons
- VII. What type of animals are used for making Juju or incantations?

S/No	Animal	Part used	Usage
1.			
2.			
3.			
4.			

VIII. Are animals easy to get in the bush now

Yes No.

E. Ranching

- I. Do you rear animals? Yes No
- II. Types of animals reared
(1) Goat (2) Sheep (3) Cattle (4) Poultry (5) All of the above
(6) Others

- III. What type of Ranching system do you operate?
(1) Normadic (2) Extensive (3) Intensive (4) Semi-Intensive
(5) Free Range (6) All of the above
- IV. How much herds of animals do you have?
- V. How many animals do you have in the land?
- VI. Types of feeding management practiced
(1) Compound/pelted feed
(2) Cutting forage or grass
(3) Animal graze in the bush
(4) Feeding in Padlock
(5) All of the above.
- VII. If the animal graze in the bush how far is it from the Game Reserve?
(1) At the Game Reserve boundary
(2) Inside the Game Reserve
(3) Very far from the Game Reserve boundary
- VIII. Name/Location of the Ranching farm/area
- IX. Do your animals graze inside the Game Reserve
Yes No
- X. Which kind of diseases mostly infect your animals
(1) Trypanosomiasis (2) Tuberculosis (3) Lice
(4) Anthrax (5) Rinderpest (6) All of the above (7)
Others

F. Fishing

- I. Do you go out fishing Yes No
- II. Where do you catch your fish?
(1) Stream (2) Fish pond (3) River (4) All of the above
(5) Other sources
- III. Which of the following principle methods and equipment do you use for capture?
(1) Cast nets (2) Gill nets (3) Hook and line

- (4) Electric Equipment (5) Explosives (6) Poison
- (7) Net and Canoe without motor
- IV. How often do you catch fish for the source?
 - (1) Everyday (2) Once a day (3) Seldom
- V. What is the selling rate of the fishes?
- VI. Give the selling rate of fish compared to bush meat
 - (1) Poor (2) Fair (3) Goat (4) Best
- VII. Type(s) of animal protein preferred by the people in your area
 - (1) Bush meat (2) Beef meat (3) Fish (4) All of the above
- VIII. Give reasons for your choice

G. Use of Fire

- I. What do you use fire for in the bush?
 - (1) For hunting purposes
 - (2) For regenerating new shoots
 - (3) To clear the farmland
 - (4) To clear away pests and insects
 - (5) For gathering Honey
 - (6) All of the above
 - (7) Other Reasons
- II. Name the location where you set fire into the bush
- III. Proximity of fire activity to the Game Reserve
 - (1) Inside the Game Reserve
 - (2) Near the Game Reserve
 - (3) Very far from the Game Reserve
- IV. What was the effect of fire to the vegetation cover?
 - (1) It favoured crop growth
 - (2) It favoured deciduous tree growth
 - (3) It leaves the ground basely covered
 - (4) It favours both grass and tree growth
 - (5) It eliminates parasite

- V. How many times a year do you set fire to the bush?.....
- VI. During what season do you set the bush ablaze
- (1) Early dry season
 - (2) Late dry season
 - (3) Beginning of dry season
 - (4) Early and late dry season.

GENERAL

- I. Name the wild animal you have seen in your farm or property
- (1) (2) (3)
- II. Do you consider the wild animals to be a nuisance?
- (1) Surely a nuisance
 - (2) Nice to have around
 - (3) A bit of both
 - (4) Don't think about them
- III. Do you make special visits to the Games Reserve?
- IV. What type of materials do you use to construct your house/building?
- (1) Wood (2) Ropes (3) Soil (4) Thatch (5) Metal sheets (6) All of the above (7) Other materials
- V. How did you obtain the material
- (1) Harvested close to the Game Reserve boundary
 - (2) Harvested in the Game Reserve
 - (3) Harvested far away from the Game Reserve boundary
 - (4) Bought from those who exploited outside the park.
- VI. What do you make use of in cooking?
- (1) Kerosene Stove (2) Gas stove (3) Fire wood

VII. How do you obtain the above

- (1) Personal Purchase
- (2) Gift from the Game Reserve
- (3) Gathered in the Game Reserve
- (4) Gathered in the Game Reserve Boundary
- (5) Gathered far from the Game Reserve Boundary

VIII. What have you and your village benefited from the Game Reserve

IX. What disadvantage have you and your village as a result of the existence of the Game Reserve?

X. Are you satisfied with the Game Reserve

XI. Any other comment/remark

Thank you.

Alhaji L. O. Suberu

APPENDIX 2

Federal University of Technology, Akure

(F U T A)

Post Graduate Studies

Dept. of Fisheries and Wildlife Management

Strictly for Staff/Game Reserve Personnel

You are expected to kindly respond to the following questions. Your co-operation will be of tremendous assistance to the study being carried out titled: "Land use pattern in Ifon Game Reserve", Ondo State.

Information collected will be treated confidentially.

Answers should be provided in three forms viz:-

- (i) Mark " " in the box provided
- (ii) Indicates Yes/No
- (iii) Give short answers.

[A] Demographic Data

- (i) Age _____
- (ii) Religion _____
- (iii) Occupation _____
- (iv) Sex _____
- (v) Level of Education
 - (1) University
 - (2) Professional School
 - (3) College/Polytechnic
 - (4) Primary School
 - (5) Illiterate

- [B] I. What is your post
- II. How often do you participate in Anticipating Patrol?
 - (1) Everyday
 - (2) Once a week
 - (3) About 4 times in a week
 - (4) Occasionally

- (5) Only When it appears that poachers are within the Game Reserve
- III. How many persons make up a patrol team?
(1) Less than 5 (2) more than 5
- IV. What is the mode of patrol
(1) Vehicle (2) Motorcycle (3) Foot (4) (1),(2) and (3) (5) Other means.....
- V. Name the instruments you use when on patrol?
(1) Gun (2) Cutlass (3) Compass (4) Others
- VI. How do you identify/locate poachers?.....
- VII. Give the frequency of illegal activities
(1) Very high (2) High (3) Moderate (4) Low (5) Very low
- VIII. During which season do you have the highest frequency of illegal activities?
(1) Dry season (2) Rainy season (3) Both seasons
- IX. Give reasons for the increase.....
- [C] I. During which season do you have the highest frequency to arrests?.....
- II. Give reasons for the increase
- III. How many poachers do you arrest on the average per month?
(1) Less than 5 (2) Between 5-10 (3) More than 10
- IV. How many arrests per month do you make averagely for the following illegal activities
(1) Illegal grazing
(2) Illegal fishing
(3) Illegal bush burning
(4) Illegal farming
- V. How do you treat arrest cases?
(1) Seize articles and set offenders free
(2) Take offenders to court
(3) Give warning (4) Others

- [D]
- I. Which species of animals do the poachers prefer
(1) (2) (3)
 - II. What are the instruments used by poachers?
(1) Gun (2) Bush fire (3) Trap (4) Machet (5) Bow and Arrow (6) Others
 - III. In which part of the Game Reserve do you normally come across poachers?.....
 - IV. What do you think is responsible for this
 - V. Which part of the Game Reserve do you find animal grazers?.....
 - VI. What type of plants are found in areas where animals grazers are found?
- [E]
- I. What effect do you think these illegal activities have on the Game Reserve management.
 - II. How do these activities effect the development of the Game Reserve?.....
 - III. What are the factors that help the perpetuation of these activities?.....
 - IV. Is it possible to check these activities
 - V. How
- [F]
- I. Are you well paid? Yes No
 - II. Do you profit from the park?.....
 - III. How do you relate to the local communities?.....
(1) Good (2) Bad (3) Average
 - IV. Do you think the local communities gain from the Game Reserve? Yes No
 - V. If yes, how?
 - VI. What suggestion do you have to improve on the management of the Game Reserve and reduce the problems facing it?
.....

Thank you.

Alhaji L.O. Suberu

APPENDIX 3

NAMES OF ANIMAL SPECIES PRESENT IN IFON GAME RESERVE

COMMON NAMES	ZOOLOGICAL NAMES	SIGHTED	INFORMATION
Forest Elephant	<i>Loxodonta africana</i>		X
Buffalo	<i>Syncerus caffer</i>	X	
Black duiker	<i>Cephalophus niger</i>	X	
Bush buck	<i>Tragelopus scriptus</i>	X	
Red River hog	<i>Potamochoerus porcus</i>	X	
Red flanked duiker	<i>Cephalophus rufilatus</i>		X
Maxwell duiker	<i>Cephalophus maxwelli</i>	X	
Yellow backed duiker	<i>Cephalophus sylvicultor</i>		X
Green monkey	<i>Cercopithecus aethiopicus</i>	X	
Mona monkey	<i>Cercopithecus mona</i>	X	
Red patas monkey	<i>Brythrocebus pata pata</i>		X
Mangabey monkey	<i>Cercocebus torquatus</i>		X
Mongoose	<i>Lchneumia ulivacea</i>	X	
Giant pangolin	<i>Kanis gigantea</i>	X	
Chimpanzee	<i>Pan troglodytes</i>	X	
Hartebeest	<i>Alcelaphus buselphus</i>	X	
Warthog	<i>Phacochoerus aethiopicus</i>		X
Palm squirrel	<i>Buxpecerus ulai</i>	X	
Giant rat	<i>Cricetomys gambianus</i>		X
Sita tunga	<i>Tragelaphus buxoides</i>	X	
Cane rate	<i>Thryonomys swinderianus</i>		X
Tree pangolin	<i>Kanis tricuspis</i>	X	
Bush baby	<i>Galagoides senegalensis</i>		X
Giant forest squirrel	<i>Protoxerus sp.</i>		X
Tree hyrax	<i>Dendrophysa sp.</i>	X	
Civet cat	<i>Viverra civet</i>	X	
Genet cat	<i>Genetta sp.</i>	X	

Source: Animal nomenclature follows Dorst and Dandelot (1970).

APPENDIX 4

LAND USE AND LAND COVER IN NIGERIA (1976/77)

Types of Land use and Land cover	%
Grass Land	16.34
Shrub/Woodland/Thicket	32.01
Forest land	5.54
Forestland/mangrove/Savanna/Riparia	4.23
n	0.14
Forest Plantation	0.17
Crop Plantation	13.74
Farmland 60% intensity	26.68
Other Extensive Farmland Area	0.82
Water/River Creeks	0.33
Built Up Area	

Source: Adeniyi 1984.

APPENDIX 5a

A CHECK LIST OF SOME ANIMALS IN THE SIX NATIONAL PARKS

CHAD BASIN NATIONAL PARK

Giraffe	<i>Giraffa camelopardalis</i>
Hartebeest	<i>Alcelaphus buselaphus</i>
Elephant	<i>Loxodonta africana africana</i>
Re-fronted gazelle	<i>Gazella rufifrons</i>
Spotted hyaena	<i>Crocuta crocuta</i>
Jackals	<i>Canis aureus</i>
Serval cat	<i>Felis serval</i>
Ceracal	<i>Felis caracal</i>
Python	<i>Python sabae</i>
Monitor lizard	<i>Veranus niloticus</i>
Ostrich	<i>Struthio camelus</i>
Pelican	<i>Pelecanus onocrotalus</i>
Guinea fowl	<i>Numida meleagris</i>
Egyptian goose	<i>Alopochen aegyptiacus</i>
Mallards	<i>Anas platyrhynchos</i>
Green-winged teals	<i>Anas sp</i>
Fulvous tree-ducks	<i>Dendrocygna bicolor</i>
Bustard	<i>Choriotis kori</i>
Crowned crane	<i>Balearica purvis</i>
Francolines	<i>Francolinus sp</i>
Cat fish	<i>Melapterusrus sp</i>
Lung fish	<i>Protopterus annectens</i>
Tilapia	<i>Tilapia tilapia</i>

APPENDIX 5b

GASHAKA GUMTI NATIONAL PARK

Colobus monkey	<i>Colobus sp</i>
Redriver hog	<i>Potamochoerus porcus</i>
Giant West African Eland	<i>Taurotragus derbianus</i>
Reedbuck	<i>Redunca redunca</i>
Sitatunga	<i>Tragelaphus spekii</i>
Duickers	<i>Cephalophus spp</i>
Bushbuck	<i>Tragelaphus scriptus</i>
Hippopotamus	<i>Hippopotamus amphibius</i>
Buffalo	<i>Syncerus caffer</i>
Chimpanzee	<i>Pantroglodytes spp</i>
Red-flanked duicker	<i>Cephalophus rufilatus</i>
Yellow-backed duicker	<i>Cephalophus sylvicultor</i>
Nile crocodile	<i>Crocodylus niloticus</i>
Royal python	<i>Python regiu</i>
Giant Fore Hog	<i>Hylochoerus meinerzhagenii</i>
Baboon	<i>Papio anubis</i>

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APPENDIX 5c

CROSS RIVER NATIONAL PARK

Lowland Gorilla	<i>Gorilla gorilla</i>
Drill (Forest Baboon)	<i>Papio leucophacus</i>
Duicker	<i>Sylvicapra sp</i>
Bush-buck	<i>Tragelaphus scriptus</i>
Warthog	<i>Phacoerus aethiopicus</i>
Monitor Lizard	<i>Varanus niloticus</i>
Buffalo	<i>Syncerus caffer</i>
Forest Elephant	<i>Loxodonta africana cyclotis</i>
Porcupine	<i>Manis sp</i>
Chimpanzee	<i>Pan troglodytes</i>
Pangolin	<i>Manis sp</i>
Grass cutter	<i>Crietomys sp</i>
Angwantibo (Golden Pttol)	<i>Arctocebus calabarensis</i>
Giant Forest Squirrel	<i>Protoxerus stangeri</i>

APPENDIX 5d

KAINJI LAKE NATIONAL PARK

Baboon	<i>Papio anubi</i>
Buffalo	<i>Syncerus caffer</i>
Bushbuck	<i>Tragelophus scriptus</i>
Elephant	<i>Loxodonta africana</i>
Hippopotamus	<i>Hippopotamus amphibius</i>
Duicker	<i>Cephalophus sp</i>
Kob	<i>Adenota kob</i>
Oribi	<i>Ourebia ourebia</i>
Reedbuck	<i>Redunca redunca</i>
Roan antelope	<i>Hippopotamus equinus</i>
Tantalus monkey	<i>Cercopithecus aethiops</i>
Warthog	<i>Phacochoerus aethiopicus</i>
Waterbuck	<i>Kobus defassa</i>
Western Harteteest	<i>Alcelaphus buselaphus buselaphus</i>
Africa rock python	<i>Python sabae</i>
Caracal	<i>Felis caracal</i>
Civet	<i>Viverra civet</i>
Genet	<i>Genetta sp</i>
Monitor Lizard	<i>Veranus niloticus</i>
Barbary shrike	<i>Laniarius barbus</i>
Fish eagle	<i>Cumcum vocifer</i>
Ground hombill	<i>Lophoceros nasufus</i>
Secretary bird	<i>Sagittarius serpentarius</i>
Stone partridge	<i>Ptilophacus petrosus</i>

APPENDIX 5e

OLD OYO NATIONAL PARK

Kob	<i>Adenota kob</i>
Bushbucks	<i>Tragelaphus scriptus</i>
Buffalo	<i>Syncerus caffer</i>
Roan antelope	<i>Hippotragus equinus</i>
Western Harteteest	<i>Alcelaphus buselaphus</i>
Baboon	<i>Papio anubis</i>
Tantalus monkey	<i>Cercopithecus aethiops</i>
Oribi	<i>Qurebia ourebia</i>
Lion	<i>Panthera leo</i>
Civet	<i>Viverra civetta</i>
Genet	<i>Genetta sp</i>
Hunting-dog	<i>Lycaon pictus</i>
Caracal	<i>Felis caracal</i>
Serval cat	<i>Felis serval</i>
Ground hombill	<i>Lophoceros nasufus</i>
Senegal bustard	<i>Euphodotis melanogaster</i>
Fracolin	<i>Francolinus spp</i>
Guinea fowl	<i>Numida meleagris</i>
Stone patridge	<i>Ptilophachus petrosus</i>
Kingfisher	<i>Halcyon senegalenis</i>

YANKARI NATIONAL PARK

Lion	<i>Panthera leo</i>
Royal	<i>Python regius</i>
Nile crocodile	<i>Crocodylus niloticus</i>
Elephant	<i>Loxodonta africana africana</i>
Hippopotamus	<i>Hippopotamus amphibius</i>
Buffalo	<i>Syncerus caffer</i>
Roan antelope	<i>Hippopotamus equinus</i>
Western Hartebeest	<i>Alcelaphus buselaphus</i>
Kob	<i>Adenota kob</i>
Bushbuck	<i>Tragelaphus scriptus</i>
Oribi	<i>Ourebia ourebia</i>
Grimm's duicker	<i>Sylvicapra grimmia</i>
Red fronted gazelle	<i>Gazelle rufifrons</i>
Warthog	<i>Phacochoerus aethiopicus</i>
Baboon	<i>Papio anubis</i>
Tantalus monkey	<i>Cercopithecus tantalus</i>
Waterbuck	<i>Kobus defassa</i>
Guinea fowl	<i>Numida meleagris</i>
Hombill (ground)	<i>Lophoceros nasutus</i>
Senegal bustard	<i>Euphodotis melanogaster</i>
Sudan bustard	<i>Oryx arabs</i>
Senegal kingfisher	<i>Halcyon senegalensis</i>

