AN ATTITUDE SURVEY OF AFRICAN STUDENTS

AT OKLAHOMA STATE UNIVERSITY TOWARD

WILDLIFE IN AFRICA
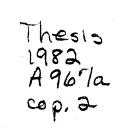
By

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

A basic law in ecology is that the more complicated the
ecosystem, the more stable it is.[1] In other words, the more
forms of life that can interact successfully in a given
region, the more stable is that region with respect to sus-
taining life. Unfortunately, man is simplifying the many
ecosystems through eradication of various species.[2]

Many African wildlife are on the rare and endangered
species list. The list includes the Black rhinoceros and
the African elephants.[3]

Raymond Dasmann, in a 1978 article, stressed the
importance of wildlife:

> Man depends on wildlife for survival, and
> wildlife depends on man. The two must find
> means to live together on planet earth or
> there will be no life on earth.[4]

According to Dasmann, this is the ultimate value of wildlife
for man. Realization of this value will open pathways to a
more satisfying way of life for people and provide for a
level of economic well-being which can be sustained.[5]

Natural ecosystems are the outcome of billions of years
of evolution. Human beings too are a product of that on-
going process and, like every other organism, are dependent

on those systems for support.[6] Most people seem to think
they have become independent of nature, but they have not.
Domesticated crops and animals also are evolutionary
products, though humanity has acted as the dominant
selective agent in their recent evolution.[7] The ability
of human beings to obtain raw materials, manage natural
resources, and control various aspects of their environment,
impressive as it may be, in no way frees human beings from
dependence on the biosphere.[8]

Technically, an ecosystem comprises all the organisms-
plants, animals, and microbes - that live in an area,
combined with their physical environment.[9] All forms of
life are modified and constrained by their physical environ-
ment. For example, a tree will be stunted if it is planted
in relatively infertile soil.[10]

Organisms may also be affected over many generations
by having their hereditary characteristics changed by
natural selection, i.e. the process of evolution.[11]

The general structure and functioning of ecosystems
are arranged in a more or less pyramidal way, with masses
of plants at the bottom supporting the whole structure, and
relatively small numbers of flesh-eating organisms at the
top. The arrangement is dominated by feeding sequences,
for example, plant to mouse to hawk to louse. This is
called the food chain.[12]

If the plants that support the food chains are
destroyed, the whole sequence will collapse. If an animal

further up the chain is destroyed that may cause a population explosion below (if we remove all the hawks, the mice will multiply out of control), which will culminate in a disaster.[13]

Destruction of an insect population through the use of insecticides can prevent pollination of the plants and similarly affect the entire nature of a living community.[14] Destruction of the biota in the soil, the nitrogen-fixing bacteria, can lead to failure of larger plants to establish and maintain themselves.[15] All these living things are in balance with their environment.

Herbivorous animals obtain indirectly their energy from sunlight in its transformed state stored in the plants that serve as food.[16] The meat eating-animals obtain their sunlight energy third hand from the plant eaters.

Green plants are the only effective converters of sunlight energy into the forms useful to animals and man. Thus, considering energy relationships alone, it is the quantity of green plants which determines the number of meat eaters.[17]

Apart from its ecological value, wildlife has a scientific value which also justifies its place in the world.[18] Most of the advances in biological and medical research have come through the studies of wild and formerly wild species of animals. Studies of rhesus monkeys have revealed new facts about human blood chemistry and the prevention of disease.[19] The antlers of deer suddenly

became important for measuring the degree of radioactive contamination of natural environment.[20] Studies of animal behavior have brought new insight into the knots and ravels encountered by psychologists in their studies of human minds.[21] We do not know when some previously obscure wild animal will gain prominence by providing some needed clue to human health and survival. We cannot know but that some species that we are allowing to vanish from the earth may be the one creature that could save the human race were it allowed to survive.[22]

Also, in many countries, wildlife has a higher economic value than can be realized from the direct marketing of its meat and hides. This is its recreational value. In Africa for example, more than 30 million people spend billions of dollars each year in hunting and fishing.[23] Private land owners, aware of economic values, have found it profitable to allow sport hunting on their lands.[24]

Statement of Problem

The increasing population and technological progress in Africa have been accompanied by the destruction of the natural habitats of many native wildlife. Africans have removed much of the vegetation for industrial developments, have polluted air, land and water, and have logged the forest and drained the wetlands.[25] Through hunting, Africans have reduced some of the rarest, most beautiful, most superbly adapted species of their wildlife heritage

to the brink of extinction.[26]

Africans recently achieved high standard-of-living
demands and the introduction of new technology permit the
production and consumption of energy and materials on a
scale viewed unbelievably extravagant a few years ago.
The introduction of new technology has resulted in the
dispersion of chemicals, in construction and transportation,
and in suburbanization that have had and continue to have
a profound effect on wildlife environment.[27] In the process,
not only do Africans overlook the intrinsic importance of
wildlife, they also ignore, at their peril, the fact that
in the long run, healthy wildlife and healthy ecosystems
are ingredients and indicators of a healthy economy.[28]

Need for the Study

The level of knowledge of wildlife and its relationship
to man among African college students is a concern that
suggests an effort be made to learn if there is a need for
increased education in this area.

The simplification of the African ecosystem can be
attributed primarily to the behavior of Africans. It seems
that due to the lack of information on the importance of
wildlife to man, many wildlife species are becoming endan-
gered. This writer believes that the correction of this
situation may be viewed as a problem for the wildlife
communicators.

Purpose of the Study

The immediate purpose of this study is to survey the attitudes of African students attending Oklahoma State University to determine if differences in the level of knowledge of wildlife and its relationship to man do exist in regard to sex, age, economic background, educational level, academic discipline and major. This study will be undertaken with a goal of gathering information that will assist wildlife communicators to design messages which will help educate Africans about the crucial role wildlife plays in the biology of the earth. It is a further aim of this author that the study will contribute to the preservation of many species of wildlife.

Limitations

This study is limited by a lack of previous research into the specific topic. Few journals deal with Africans' attitudes toward wildlife. Most of these were not available in the Oklahoma State University Library. They were available on loan from other university libraries, such as the Ohio State University and the University of Oklahoma.

Also, this study is limited to only African students at Oklahoma State University.

FOOTNOTES

[1]William W. Bart, "A Hierarchy among Attitudes toward Animals," in Clay Schoenfeld, ed., Interpreting Environmental Issues, (Madison, 1973), p. 263.

[2]Ibid.

[3]C. A. Spinage, "A Review of Ivory Exploitation and Elephant Trends in Africa," East African Wildlife Journal, Vol. 11 (1973), pp. 281-289.

[4]Raymond R. Dasmann, "Wildlife and Ecosystem," in Brokaw, H. P., ed., Wildlife and America, (Washington, D.C., 1978), p. 18.

[5]Ibid.

[6]Paul and Ann Ehrlich, "Indirect Benefits: Life-support Systems," Extinction, (New York, 1974), p. 77.

[7]Ibid.

[8]Ibid.

[9]Ibid., p. 78.

[10]Ibid.

[11]Ibid.

[12]Ibid., p. 79.

[13]Ibid.

[14]Raymond R. Dasmann, Wildlife Biology, (New York, 1964), p. 28.

[15]Ibid.

[16]Ibid.

[17]Eugene Odum, Fundamentals of Biology, (Philadelphia, 1959), p. 546.

[18]Raymond R. Dasmann, Wildlife Biology, (New York, 1964), p. 10.

[19] Ibid.

[20] Ibid.

[21] Ibid.

[22] Ibid.

[23] S. S. Ajayi, "Wildlife and Tourism in Tanzania: Possibilities in Nigeria," Nigeria Journal of Fields, Vol. 36 (1971), pp. 34-49.

[24] Ibid.

[25] ABC's World News Tonight (January 6, 1982).

[26] Ibid.

[27] Ibid.

[28] Ibid.

CHAPTER II

REVIEW OF THE LITERATURE

A search of the literature seems to indicate that
Africans' attitudes toward wildlife have contributed to
the destruction of various species of wildlife.

A survey by Laurence G. Frank et al. revealed the
presence of chlorinated hydrocarbon residues in Kenyan
birds of prey.[1] Pectoral muscle samples from forty-five
individuals representing eighteen species of resident
Kenyan raptors of different trophic levels were analyzed
for the presence of chlorinated hydrocarbon residues. The
tissues analyzed were obtained primarily from Nakuru, and
Nairobi areas of the Kenya highlands. Large-scale agri-
cultural patterns, in which a variety of pesticides are
used, predominate in the study area. DDT and dieldrin are
the most commonly used organochlorine insecticides; aldrin
and lindane are used to a lesser degree and organomercurial
fungicides are applied to seed-dressings.[2]

Control samples were collected from the Northern
Frontier District, a semi-arid region not subjected to
pesticide applications. Agriculture is largely limited to
nomadic pastorialism, although small cultivated areas occur
near major rivers.

Frank et al. found that most raptors from agricultural areas contained residues of DDT metabolites, and many contained dieldrin as well; raptors from non-agricultural areas did not contain detectable levels of any organochlorines.[3] Falcons and accipiters from highly agriculturalized areas, such as Nairobi, contain residue levels equivalent to those found to affect the reproduction of other raptorial species.[4]

Investigations in which raptor tissues have been analyzed have dealt with the possible side-effects of organochlorines used in tsetse-fly control programs, although the use of pesticides for agricultural purposes is probably more prevalent in many parts of Africa.[5] Several months after spraying operations, Koeman and Pennings found that DDE residues were higher in the livers of three black kites than those observed in non-raptorial species from the same area of western Kenya; dieldrin and p,p'-DDE levels ranged between 0.98 - 1.4 and 3.8 - 10.3 parts per million (ppm), respectively. Ulfstrand and Sodergren reported very low levels in birds, including two raptors, from an agricultural area in Tanzania where pesticides were not known to be used.[6]

In general, chlorinated hydrocarbon residues are highest in top predators. Table I summarizes residue levels according to trophic levels for birds collected in agricultural areas.

Chlorinated hydrocarbon residues were detected (<0.01 ppm) in thirty individuals (78 percent) of birds investi-

gated). The most widespread contaminant was p,p'-DDE and related DDT compounds and its metabolic products: p,p'-DDE was detected in twenty-eight individuals. Residues of this metabolite ranged from <0.01 to 40 ppm with median value of 1.5 ppm where detected and 0.3 ppm in all samples.[7]

TABLE I

ORGANOCHLORINE RESIDUES IN RAPTORS COLLECTED FROM
AGRICULTURAL AREAS ACCORDING TO TROPHIC LEVEL

Trophic group	Prey Preference	Sample size	Median residue levels in ppm (wet wt) (range in parentheses)	
			Total DDT	Dieldrin
Falcons and Accipiters	Birds	6	13.16 (1.53-31.2)	2.27 (<0.01-7.09)
African Fish Eagle	Fish, water-birds, carrion	9	0.29 (<0.01-16.04)	0.01 (<0.01-6.88)
Buteo, Lophaetus, Elans, Tyto and Bubo	Small mammals particularly rodents	16	0.31 (<0.01-2.72)	0.19 (<0.01-3.87)
Gyps Milvus	Carrion omnivors	7	1.47 (<0.01-40.00)	0.01 (<0.01-1.24)

The problem seems to be increasing every year because the chlorinated hydrocarbon observed in this survey are, in general, substantially higher than those previously

reported among non-raptorial birds inhabiting agricultural areas in East Africa.[8] Comparisons between the various predatory birds of the Lake Nakuru ecosystem best illustrate these differences. J. H. Koeman et al. detected extremely low residue levels in the piscivorous African Cormorant in a 1970 study. Dieldrin and p,p'-DDE residues in the liver tissues ranged between 0.0004-0.0014 ppm and 0.01-0.021 ppm (wet weight), respectively for a sample of three birds.[9] The highest levels of DDE and dieldrin (0.064 and 0.091 ppm, respectively) were observed in a White Pelican. By contrast, the p,p'-DDE levels detected in five African Fish Eagle from the same locality ranged between 0.3 and 7.0 ppm (wet weight) with a median value of 1.6 ppm.[10] Dieldrin was detected in only two individuals. Total DDT and dieldrin residues in these individuals amounted to 13.4 ppm and 6.9 ppm.[11]

Exploitation of Elephants

A review of published data outlines the intensive exploitation of African elephants for ivory.[12] Records suggest that this began in the early seventeenth century in West Africa, and that hunting pressure was sufficient to eliminate, or drive out, the population over wide areas.[13]

Until the middle of the seventeenth century the Portuguese reported ivory in Angola as very common, but these reserves were exhausted by 1850. Between 1608 and 1612 the Dutch were estimated to be exporting 23,000 kg per

year from Loango (Poite Noire). The introduction of firearms about 1635 probably intensified hunting, and by 1642 the vili, a tribe of elephant hunters, were hunting as far east as Stanley Pool. In the next century the Portuguese turned their attention back to ivory.[14]

In 1832 Luanda exported 1360 kg, rising to 47,700 in 1844, and 85,860 kg in 1859. By 1854 the Cokwe, a tribe of elephant hunters living in present-day Lunda, apparently had virtually eliminated elephant from the north and east of their district, and were hunting as far east as the Zambesi headwaters. By the mid-1860s there was no ivory left in the region, and the Cokwe acted as middlemen for the ivory of the Lunda further east. This source was soon exhausted, and the trade moved to the northeast.[15]

There is yet another region of exploitation, the Sudan and northwest Uganda, whose ivory was channeled through Khartoum (Table II). At the same time that the Arabs penetrated from the east, the Khartoumers penetrated from the north, up the Nile to Lake Albert. By 1860 intensive ivory exploitation had begun, and from 1853 to 1879 an average of 148,000 kg per year was exported from Khartoum to a single Antwerp ivory house. Table II shows how remarkably constant was this supply. Many elephants were killed by ring-firing. In 1888 Khartoum's output was 42,000 kg, and by 1905 it had dropped to 20,000 kg. The Lado enclave, at that time famous for its big elephants, was taken over by the Belgian administration in 1894, which

according to R. W. Beachy, practically denuded the area of elephant.[16]

TABLE II

IVORY EXPORTED (KG) FROM KHARTOUM TO H. A. MEYER

Year	Weight (kg)	Year	Weight (kg)
1853	92,000	1867	137,000
1854	149,000	1868	95,000
1855	123,000	1869	138,000
1856	79,000	1870	113,000
1857	144,000	1871	167,000
1858	203,000	1872	107,000
1859	174,000	1873	155,000
1860	154,000	1874	113,000
1861	114,000	1875	166,000
1862	186,000	1876	120,000
1863	115,000	1877	185,000
1864	166,000	1878	205,000
1865	97,000	1879	80,000
1866	130,000		

In 1900, Grogan and Sharp wrote:

> In the greater part of Africa the elephant
> is now a thing of the past; and the rate at
> which they have disappeared is appalling.
> Ten years ago elephant swarmed in places
> like British Central Africa, where now you
> will not find one.[17]

Wasteful and cruel, elephant poaching has continued unabated, and some fear it will not stop until the elephants are gone.

Destruction of Wildlife Habitats

P. E. Glover found that due to overpopulation of Africans, many lands that could be used as habitats for wildlife are being used for the building of houses, growing food crops and for grazing animals.[17] Many wild animals are lost because of a lack of shelter, food, and breeding spaces. This is because wildlife require space that Africans need for settlement and grazing their animals.[18]

The public's desire for reptile leather has resulted in the overhunting of Nile crocodile.[19] Hugh B. Cott of Cambridge University's Museum of Zoology recently found that poachers in Uganda have reduced the once prodigious numbers of crocodiles to about 250 nesting females; over-population of storks, baboons, monitor lizards, and mongooses, the result of ecological imbalance, threatens the few eggs and young that are produced.[20]

The crocodiles killed by poachers are drawn almost entirely from the breeding population. In areas of heavy crocodile hunting, the remaining animals are almost too young to breed.[21] This is a classic sign of overhunting.

Cott has studied the ecology of these animals and describes the difficulty of protecting them:

> The main immediate threat to the crocodile's survival comes from the technics now employed by professional hunters. Working at night in fast motor boats, these men easily locate their quarry in the beam of a powerful spot-light, approach to shoot at point-blank range and gaff the dying animal before it can sink.[22]

Plight of the Antelope

The animals of South Africa have suffered terribly from civilization. The Blue-horse antelope has vanished forever. The white-tailed gnu, the bontebok, and the African elephants once roaming in great herds - each survives only in small numbers.[23]

Africa is a continent of antelopes. Nowhere else is there the variety of antelope native to Africa.[24] They inhabit forests, reed thickets, deserts and swamps, but the largest herds live on the grassy plains or lightly wooded savannahs. The days are past when antelope herds numbered in thousands, filled the vast expanses of the African plains. R. M. Laws did a study on movements and food habits of antelopes on the grassland of Tsavo. He found that the Blue-horse antelopes are more susceptible to habitat destruction than any other animals.[25] Due to civilization, many of the grasslands needed as habitats for the Blue-horse antelopes are used for housing projects and industrial developments.[26]

Throughout the nineteenth century, the White rhinoceros

suffered heavily at the hands of white hunters, poachers, and Africans.[27] Observing the hunting scene in the closing year of the nineteenth century, one famous hunter, Fredrick Selous, remarked:

> Thousands upon thousands of these huge creatures were killed by white hunters and natives armed with the white man's weapons, and the species had become practically extinct.[28]

Today the white rhino is listed as an endangered animal totaling only 200 to 300.[29]

ABC's World News Tonight reported January 6, 1982 that due to urbanization and industrialization, most wildlife in Kenya are now compressed to only six percent of the land.[30] The report said that the Black rhino are the most seriously endangered animal because they are being hunted extensively for their horns. They are hunted so much that only translocation to safety zones such as Nairobi National Park can give them protection.

Henshaw and Child in their survey of Nigerians' attitudes toward wildlife found that an active interest in wildlife in a positive sense was found among those who consider wildlife and wild nature important to their own welfare. In their research, they found that such attitudes are acquired by those who are exposed to wild countries, but also are acquired from family tradition, education and travels.[31] Henshaw and Child found that people with negative attitudes toward wildlife are those who live and work in large cities where they rarely contact wild places or things. These are young people between the age of 20 to 35.

Farmers are found to favor hunting and control of destructive wildlife and are generally opposed to the preservation and increase of it.[32] Although they want destructive wildlife controlled, they are found to be in favor of preserving a few species of wildlife for future generations. They are also concerned about such things as controling water pollution, but at the same time believe that pesticides should be used.[33]

FOOTNOTES

[1]Laurence G. Frank and G. Rodney M. Jackson, "A Survey of Chlorinated Hydrocarbon Residues in Kenyan Birds of Prey," East African Wildlife Journal, Vol. 15 (1977), pp. 295-304.

[2]Ibid.

[3]Ibid.

[4]Ibid.

[5]J. H. Koeman and J. H. Pennings, "An Orientation Survey on the Side Effects and Environmental Distribution of Insecticides Used in Tsetse Control in Africa," Bull. Environ. Contam. Toxicol., Vol. 5 (1970), pp. 164-170.

[6]S. Ulfstrand and A. Sodergren, "Organochlorine Residues in East African Birds," Ambio, Vol. 1 (1972), pp. 150-151.

[7]Frank and Jackson, p. 298.

[8]Koeman and Pennings, p. 165.

[9]Ibid.

[10]Ibid.

[11]Ibid.

[12]C. A. Spinage, "A Review of Ivory Exploitation and Elephant Trends in Africa," East African Wildlife Journal, Vol. 11 (1973), pp. 281-289.

[13]Ibid.

[14]J. C. Miller, "Cokwe Trade and Conquest in the Nineteenth Century," in R. Gray and D. Birmingham, eds. Pre-colonial African Trade, (London, 1970), p. 18.

[15]Ibid.

[16]R. W. Beachy, "The East African Ivory Trade in the Nineteenth Century," Journal of African History, Vol. 8 (1967), pp. 269-290.

[17]P. E. Glover, "Wildlife and Man in Conflict," Oryx, Vol. 12 (1970), pp. 76-79.

[18]Ibid.

[19]David W. Ehrenfeld, Conserving Life on Earth, (New York, 1972), p. 184.

[20]Ibid.

[21]Ibid.

[22]Ibid.

[23]Wolfgang Engelhardt, Survival of the Free, (New York, 1976), p. 119.

[24]R. M. Laws, "The Tsavo Research Project," Sci. Prog. Oxf., Vol. 58 (1969), pp. 495-531.

[25]Ibid.

[26]Ibid.

[27]Robert M. McClung, Lost Wild Worlds, (New York, 1972), p. 184.

[28]Ibid.

[29]Ibid.

[30]ABC's World News Tonight (January 6, 1982).

[31]J. Henshaw and G. S. Child, "Wildlife Attitudes in Nigeria," Oryx, Vol. 10 (1972), pp. 280.

[32]Ibid.

[33]Ibid.

CHAPTER III

METHODOLOGY

This section outlines the methodology of this study,
including: (1) operational definitions of variables,
(2) data gathering procedures, and (3) methods of measure-
ment.

Operational Definition

The independent variables of this study were sex, age,
education, parents' occupation, background, and major
academic discipline. The true population of African
students at Oklahoma State University was surveyed rather
than randomly selecting a sample of subjects because the
overall population of African students at Oklahoma State
University was only 200.

Respondents were categorized as students from ages
(1) 19-29, and (2) 30 and above. They were students in
either science or non-science majors.

Respondents were placed in male and female categories
and their backgrounds were identified as rural or urban.
Also, respondents were categorized by academic classifi-
cation such as freshman-sophomore, junior-senior, and
graduate.

Respondents were students from different socio-economic backgrounds in regard to parents' occupation which was divided into three groups: (1) farming, (2) business, and (3) civil service. All dealt with non-manipulative attributes. According to Kerlinger:

> . . . survey research focuses on people . . .
> The social scientific nature of survey research is revealed by the nature of its variables; which can be classified as sociological facts and opinions and attitudes. Sociological facts are attributes of individuals that spring from their membership in social groups: sex, income, political and religious affiliate, socio-economic status, education, age, living expenses, occupation, race, and so on.
> The second type of variable is psychological and includes opinions and attitudes on the one hand, and behaviors, on the other. . . . The sociological variables are then related in some manner to psychological variables.
> Survey research is probably best adapted to obtaining personal and social facts, beliefs, and attitudes.[1]

In this context, this study dealt with sociological facts affecting psychological variables and psychological variables affecting behavior. Sociological facts were the presumed cause of attitudes and attitudes were the presumed cause of behavior.

This study had one dependent variable: attitude toward wildlife. Kerlinger defines an attitude as: ". . . an organized predisposition to think, feel, perceive, and behave toward a referent object."[2] This study sought to learn attitudes to enable wildlife communicators to know which groups tend to be negative toward, or ignorant of, the need to protect wildlife to

enable wildlife communicators to design more effective messages for these groups.

This study did not have any hypothesis as no previous studies have investigated this subject. This study focused upon the following research questions:

1. Do males and females significantly differ in their attitudes toward wildlife?

2. Do African students in different age groups significantly differ in their attitudes toward wildlife?

3. Do African students from different academic classifications differ significantly in their attitudes toward wildlife?

4. Do respondents from different socio-economic backgrounds, such as parents' occupation, significantly differ in their attitudes toward wildlife?

5. Do respondents in science and non-science majors differ significantly in their attitudes toward wildlife?

6. Do respondents from different backgrounds such as urban or rural differ significantly in their attitudes toward wildlife?

Independent Variables

Academic Disciplines: Those in science majors would have taken some courses in biology and would be assumed to know more about wildlife and its importance to man. Those in non-science majors seemingly would lack this type of knowledge and would tend to be negative toward wildlife

conservation.

Background: Students from urban areas would tend to have lost contact with nature and natural things. Those who were brought up in rural areas would have contacted nature and natural things often in their lives. Therefore, those African students from urban areas would be less favorable toward wildlife conservation because of their lack of exposure to it in their daily activities; students from rural areas would be more favorable to wildlife conservation because of their frequent exposure to wildlife during their lives.

Parents' Occupation: Wildlife and livestock are known to be in conflict on farm areas because wildlife tend to eat livestock. Farmers who earned a living raising livestock seemingly would dislike wildlife. Students whose parents are farmers would have experienced wildlife eating livestock and would dislike wildlife. They would be less likely to favor wildlife conservation than those whose parents are businessmen and civil servants.

Age: Much land has been lost and many wildlife species have been destroyed due to the loss of habitat because of urbanization and industrialization. Those who were born before the habitat destruction would be more likely to have had contact with wildlife and wild areas compared to those who were born after industrialization.

Data-Gathering Procedure

Items for this study were selected through a review of the literature. Each item was selected for particular reasons which were:

Item 1 - Hunting rhinos should be banned because they are an endangered species.

A search of the literature showed that the White rhinoceros and the Black rhinoceros are on the endangered species list because they are being hunted extensively for their horns.[3] ABC's World News Tonight, Jan. 6, 1982, reported that in Kenya, the most dangerously endangered animal is the Black rhino which is hunted for its horns. It also was reported that only translocation to safety zones such as Nairobi National Park can give them protection.[4]

Item 2 - Nothing is wrong with using wildlife as guinea pigs to conduct scientific research.

Raymond R. Dasmann said that the scientific value of wildlife justifies its place in the world.[5] Apart from ecology, wildlife has scientific values that often can neither be measured nor clearly stated. Most advances in biological and medical research have been realized from studies of wild and formerly wild species of animals.

Studies of rhesus monkeys revealed new facts about human blood chemistry and the prevention of disease.[6] The antlers of deer became important for measuring the degree

of radioactive contamination of natural environments.[7]
Studies of animal behavior revealed new insights into the
knots and ravels encountered by psychologists in their
studies of human minds.[8] It cannot be determined when
some previously obscure wild animal will gain prominence
by providing some needed clue to human health and survival.
It is possible that some species being allowed to vanish
from the earth may be the one creature that could save the
human race were the species allowed to survive.

Item 3 - Pesticides should not be used on farmlands
where wildlife is found.

Laurence G. Frank et al. revealed the presence of
chlorinated hydrocarbon residues in Kenyan birds of prey.[9]
The tissue analyzed were obtained primarily from Nakuru,
and Nairobi areas of Kenya highlands where maize, wheat,
and livestock are the major agricultural products.[10] DDT
and dieldrin are the most commonly used organochlorine
insecticides.[11] Frank et al. found most raptors from
agricultural areas contained residues of DDT metabolites,
while those from non-agricultural areas, that served as the
control, did not contain detectable levels of any organo-
chlorines.[12] Many raptors contain residue levels that
affect reproduction.[13]

Item 4 - More serious problems confront Africans than
protecting wildlife.

Robert M. McClung wrote that the diverse population of

Africans face a bewildering number of problems - problems or rising populations, the colonial past, and geography.[14] Africa's lands are bordered by the vast Sahara Desert in the north and the Kalahari Desert in the southwest, which merge into wooded steppes and extensive grasslands and plains on either side of the vast rain forest of the Congo.[15] The southern end of the continent is a varied country, with coastal swamps and grasslands backed by mountains and semidesert areas. Glover found that, due to overpopulation of Africans, many former wildlife habitats were being cleared for the building of houses, growing food crops and for grazing animals.[16]

Item 5 - People who hunt elephants for ivory should be prosecuted.

Intensive exploitation of African elephants for ivory began in the early seventeenth century in West Africa. The persistence of the hunters eliminated or drove out elephants in many areas.[17] Killing elephants for tusks was a common activity on the African continent. At least two million elephants were shot from 1880 to 1910.[18] Wasteful and cruel elephant hunting and poaching have continued unabated, and some believe this will not stop until something is done or the elephants are eliminated.

Item 6 - Species that are becoming extinct should be protected for the benefit of future generations of people.

Raymond Dasmann stressed the importance of wildlife as

that which ensures the continued survival of life on earth.
He wrote:

> Man depends on wildlife for survival, and
> wildlife depends on man. The two must find
> means to live on together on planet earth
> or there will be no life on earth.[19]

According to Dasmann, this is the ultimate value of wildlife
for man. Realization of the meaning of this value will open
pathways to a more satisfying way of life for people and
provide a level of sustained economic well-being. Pro-
tecting wildlife, therefore, can be the best way of
providing for human survival now and in the future.[20]

Item 7 - Money could be spent more wisely than using
it to set aside parks for vanishing wildlife.

Glover wrote that every piece of accessible land in
Africa, public or private, within 50 to 100 miles of all
major cities is in danger of being used for residential or
commercial construction by 1985.[21] Contrary to popular
belief, addition of new residential property to the tax
rolls, particularly in development blocs, rarely helps the
community economically. On the other hand, if the community
bought the land for parks - even assuming no federal or
state aid (which they have received) - the land would be
completely paid for in ten years at approximately the same
annual cost but with no subsequent expenses except for
nominal maintenance costs.[22]

Item 8 - Pollution of waterways endanger wildlife and
should be reduced.

L. H. Brown and J. D. Hopcraft found that organochlorine pesticides are present in three East African Rift Valley Lakes -- Naivasha, Nakuru and Baringo.[23] A non-lethal dose of DDT insecticide ingested by a filter feeding Plankter (member of the plankton, small marine animal and plant life) from these lakes will be deposited in its fatty tissues. When the plankter is eaten by a predatory fish, the DDT will be stored in the fatty tissues of the fish.[24] The fish thus become a kind of insecticide trap, accumulating concentrations of DDT much higher than those found in its prey. Brown and Hopcraft found that organochlorine pesticides affect the normal breeding of water-born animals and make it impossible to maintain a stable population level.[25]

Item 9 - There is no need for concern about any danger to the continued existence of wildlife.

Dasmann wrote that an interest in wildlife is as old as mankind. Today, however, it must sometimes be justified, for there are those who in the shelter of city life have lost touch with the natural world. These people sometimes question the motives and even the sanity of others who show concern for wild creatures.[26] In much of the world today, it has been accepted that a concern for wildlife is a legitimate human interest and a responsibility of the government. Since most wildlife are threatened by man, most nations, even the newer ones, have some kind of a department for wildlife conservation with the job of

administering those laws which govern man's relations with wild animals, and perhaps the additional duty of preserving some national parks and wildlife refuges. The effectiveness of these organizations varies greatly from one country to another, depending on the level of public understanding and public attitudes toward wildlife.[27]

Item 10 - Hunting of wildlife for sport is fun and licenced hunting should be encouraged.

In many countries wildlife has a higher economic value than can be realized from the direct marketing of its meat or hides. This is its recreational value. In Africa for example, more than 30 million people spend billions of dollars each year in hunting and fishing.[28] These support major tourist and recreational industries.

The demand for space in which to exercise the pursuit of fish or game has provided justification for setting aside large blocks of public land as recreational land from which any detrimental or directly competitive form of land use is excluded.[29] Private land owners, aware of economic values, have found it profitable to allow sport hunting on their lands. For example, the British East African Company issued a regulation under the title "sporting licences" which states that every person desiring to take or kill game in the territory of the Imperial British East African Company must obtain a licence from the company for that purpose.[30]

Item 11 - Africans need more space for urbanization
rather than saving space for wildlife.

ABC's World News Tonight reported Jan. 6, 1982, that,
due to urbanization and industrial expansion, most wildlife
in Africa, especially in Kenya, are confined to only six
percent of the land.[31] The urge for industrial expansion
has resulted in the destruction of many wildlife habitats.
This indirectly eliminates wildlife due to the lack of
required shelter and food needed by wildlife.[32]

Item 12 - More research is needed to find ways to
increase the population of vanishing species.

The effectiveness of wildlife protection depends to a
large degree on the level of public understanding and the
public attitude toward wildlife.[33] Attitudes toward wild-
life vary from active interest to near complete indifference.

Indifference is found among some who live and work in
spheres that rarely contact wild places, or things, such as
the confirmed city dweller. There are some who appear to
find all they desire within the confines of a large city.[34]
Indifference to wildlife also can be found among people in
densely-populated farming areas where wild creatures have
been exterminated. These people are concerned with tamed
things, the cultivated crops, the farm animals, and perhaps
a few pests. Henshaw and Child in their survey of Nigerians'
attitudes toward wildlife also found that an active interest
in wildlife in a positive sense was found among those who
consider wildlife and wild nature important to their own

welfare. In their research, they found that such attitudes are acquired by those exposed to wild countries, but also are acquired from family tradition, such as children of hunters, and education and travels.[35] More research in this area is needed to provide wildlife communicators with an indication of which groups must be made aware of the need for the preservation of African endangered species.

Methods of Measurement

The overall purpose of this study was to determine the attitudes toward wildlife of African students attending Oklahoma State University.

The specific purposes of the study were: (1) to determine if there was a significant difference in the mean attitudes of African students according to their sex; (2) to determine if there was a significant difference in the mean attitudes of students of different age groups; (3) to determine if there was a significant difference in the mean attitudes of students from different socio-economic backgrounds, such as parents' occupation; (4) to determine if there was a significant difference in mean attitudes of students in science and non-science majors; (5) to determine if there was a significant difference in mean attitudes of students from different backgrounds such as urban or rural; (6) to determine if there was a significant difference in mean attitudes of students from different academic classifications.

Simple analysis of variance was used to analyze data, while correlation ratios explained the strength of the relationship between the dependent variable (attitudes toward wildlife) and the independent variables of sex, age, background, education, parents' occupation and academic discipline.

To measure the attitudes of African students at OSU toward wildlife, a five-point Likert-type scale was used. Respondents were asked to mark the appropriate scale point which represented their degree of agreement toward wildlife. An example of a scale item was:

Money could be spent more wisely than using it to set aside parks for vanishing wildlife.

Strongly agree __ __ __ __ __ Strongly disagree
1 2 3 4 5

To avoid potential response bias, the numerals under scale positions, as shown above, were not included on the student survey.

Some items were worded favorably toward wildlife while some were worded unfavorably. The highest scale value was given to response choices indicative of the most favorable attitude toward wildlife conservation, while the lowest scale value was given to response choices indicative of the least favorable attitude.

FOOTNOTES

[1]Fred W. Kerlinger, Foundations of Behavioral Research, (New York, 1973), p. 411.

[2]Ibid., p. 495.

[3]Noel Simon, The Wild Life of Kenya, (London, 1963), p. 201.

[4]ABC's World News Tonight (January 6, 1982).

[5]Raymond R. Dasmann, Wildlife Biology, (New York, 1964), p. 10.

[6]Ibid.

[7]Ibid.

[8]Ibid.

[9]Laurence G. Frank and Rodney M. Jackson, "A Survey of Chlorinated Hydrocarbon Residues in Kenyan Birds of Prey," East African Wildlife Journal, Vol. 15 (1977), pp. 295-304.

[10]Ibid.

[11]Ibid.

[12]Ibid.

[13]Ibid.

[14]Robert M. McClung, Lost Wild Worlds, (New York, 1976), p. 119.

[15]Ibid.

[16]P. E. Glover, "Wildlife and Man in Conflict," Oryx, Vol. 12 (1970), pp. 76-79.

[17]C. A. Spinage, "A Review of Ivory Exploitation and Elephant Trend in Africa," East African Wildlife Journal, Vol. 11 (1973), p. 281.

[18]McClung, p. 119.

[19]Dasmann, p. 18.

[20]Ibid.

[21]Ibid., p. 88.

[22]Ibid.

[23]L. H. Brown and J. B. Hopcraft, "Population Structure and Dynamics in African Fish Eagle at Lake Naivasha, Kenya," East African Wildlife Journal, Vol. 11 (1973), pp. 255-269.

[24]Ibid.

[25]Ibid.

[26]Dasmann, p. 8.

[27]Ibid.

[28]Ibid.

[29]Ibid.

[30]Simon, p. 300.

[31]ABC's World News Tonight.

[32]Ibid.

[33]J. Henshaw and G. S. Child, "Wildlife Attitudes in Nigeria," Oryx, Vol. 10 (1972), pp. 280.

[34]Ibid.

[35]Ibid.

[36]Kerlinger, p. 496.

CHAPTER IV

FINDINGS

The primary purpose of this study was to determine to
what extent sex, age, education, academic major, background,
and parents' occupation related to African students' atti-
tudes toward wildlife.

As discussed in Chapter III, a single-factor analysis
of variance was used to analyze data, while eta correlation
ratios explained the strength of the relationships between
the dependent variable (attitude toward wildlife) and the
independent variables of sex, age, education, major, back-
ground, and parents' occupation.

Two hundred copies of opinionnaires containing 12
wildlife attitude statements were distributed to African
students at Oklahoma State University. Of these, 114 were
returned. The age groups were divided originally into
19-29, 30-39, 40 and above, but only four respondents were
from the 40 and above age group. This made it necessary to
eliminate the 40 and above age group and change the 30-39
age group to 30 and above. The four respondents from the
40 and above age group were added to the 30 and above age
group.

The Scale Items

The mean attitudes of all subjects on each item showed that items 6, 8, and 12 were most favored by the 114 respondents. Their mean attitudes were 4.2, 4.1, and 4.0, respectively, and indicated support of wildlife conservation in Africa. These items were:

6. Species that are becoming extinct should be protected for the benefit of future generations of people.

8. Pollution of waterways endangered wildlife and should be reduced.

12. More research is needed to find ways to increase the population of vanishing species.

Items 10, 2, and 4 were least favored by the 114 respondents. Their mean attitudes were 2.9, 2.4, and 2.2, respectively. These items were:

10. Hunting of wildlife for sport is fun and licenced hunting should be encouraged.

2. Nothing is wrong with using wildlife as guinea pigs to conduct scientific research.

4. More serious problems confront Africans than protecting wildlife.

The remaining six items has mean attitudes ranging from 3.1 to 3.6.

Table III shows the rank order of mean agreement of

opinions on wildlife across 114 respondents.

TABLE III

RANK ORDER OF MEAN AGREEMENTS WITH OPINIONS ON
WILDLIFE ACROSS 114 RESPONDENTS

Wildlife Opinions	Mean Scores	Rank Positions
Protecting species that are becoming extinct	4.2	1
Reducing pollution of waterways	4.1	2
Research needed to increase wildlife population	4.0	3
Hunting rhinos should be banned	3.6	4
No need for concern about wildlife existence	3.5	5
Prosecuting people hunting elephant for ivory	3.4	6.5
Spend money more wisely than creating wildlife parks	3.4	6.5
Africans need space for urbanization	3.2	8
Using no pesticides on farms with wildlife	3.1	9
Encouraging licenced hunting	2.9	10
Using wildlife to conduct scientific research	2.4	11
More serious problems confront Africans	2.2	12

The overall mean attitude of the 114 respondents on the 12 wildlife statements was 3.33 and indicated African students at Oklahoma State University hover around the neutral point in opinion about wildlife conservation in Africa.

Tests for Research Questions

Six tests comprised the variance analysis of data: (1) test for differences in mean attitudes between sex; (2) test for differences in mean attitudes between age groups; (3) test for differences in mean attitudes between parents' occupation; (4) test for differences in mean attitudes between backgrounds; (5) test for differences in mean attitudes between academic disciplines; and (6) test for differences in mean attitudes between degrees of education.

One hundred fourteen African students at Oklahoma State University indicated their degree of agreement with 12 statements pertaining to wildlife conservation. From their mean attitudes, statistical indices and probabilities were computed. Factor analyses of variance provided the significance of mean differences and eta correlation ratios determined strength of relationship between the dependent variable of attitudes toward wildlife and the independent variables of sex, age, parents' occupation, background, academic discipline, and education.

Attitudes Toward Wildlife: Sex

Question 1:   Do males and females significantly differ
in their attitudes toward wildlife?

The mean attitude for males was 3.33.   Females had a
mean attitude of 3.35.   A difference of .02 was not signifi-
cant (F = .267, df = 112/1, p > .05), indicating that sex does
not play a significant part in determining African students'
attitudes toward wildlife.   Probability of obtaining
different wildlife attitudes between male and female will
occur by chance more than 5 times in 100.   But both males
and females favor wildlife conservation slightly since their
mean attitudes are above 3.00.   Table IV shows respondents'
mean by sex.

TABLE IV

RESPONDENTS' MEAN ATTITUDES BY SEX TOWARD WILDLIFE

Source of variance	df	Sum of squares	Mean squares	F-ratio	Prob.
Between males and females	1	.2	.2	.267	> .05
Within males and females	112	84.2	.75		
Total	113	84.4			

An eta correlation ratio of .05 indicates that the relationship between mean attitudes and sex is a very weak one. Less than 1 percent of the variance in attitude scores was accounted for by the fact that respondents were male or female.

Attitudes Toward Wildlife: Age

Question 2: Do African students in different age groups significantly differ in their attitudes toward wildlife?

Respondents were divided into two age groups: 19-29 and 30 and above. Mean attitude for respondents of age 19-29 was 3.41, while respondents in the 30 and above age group had a mean attitude of 3.38. A mean difference of .03 was not significant ($F = .02$, $df = 112/1$, $p > .05$), indicating that age does not play a significant part in determining African students' attitudes toward wildlife. Probability of obtaining different wildlife attitudes between students of different age groups will occur by chance more than 5 times in 100. Since the two age groups exceeded 3.0 in mean attitudes, then they both slightly favor wildlife conservation in Africa. Respondents from age 19-29 favor wildlife conservation a little bit more than respondents from age 30 and above.

An eta correlation ratio of .01 indicated that the relationship between mean attitudes and age groups was near zero. Respondents' mean by age is shown in Table V.

TABLE V

RESPONDENTS' MEAN ATTITUDES BY AGE TOWARD WILDLIFE

Source of variance	df	Sum of Squares	Mean Squares	F-ratio	Prob.
Between ages 19-29, 30 and above	1	.01	.01	.02	> .05
Within ages 19-29, 30 and above	112	55.62	.49		
Total	113	55.63			

Attitudes Toward Wildlife: College

Classification

Question 3: Do respondents from different classifi-
cations differ significantly in their attitudes toward
wildlife?

Mean attitudes of freshman-sophomore, junior-senior,
and graduate were 3.69, 2.92, and 3.58, respectively. A
significant difference was observed for classification
($F = 11.62$, $df = 2/111$, $p < .01$), indicating that classifi-
cation of respondents is significant in determining
African students' attitudes toward wildlife.

Since mean attitudes for freshman-sophomore and
graduates were above 3.00, then these indicated a somewhat
favorable attitude toward wildlife. A 2.92 mean attitude

for junior-senior showed an unfavorable attitude toward
wildlife.

Gap tests indicate there was a significant difference
in attitudes toward wildlife between freshman-sophomore
and junior-senior. This difference happened by chance
less than 5 times in 100 and 1 time in 100. No significant
difference in attitudes toward wildlife was observed
between freshman-sophomore and graduate (p > .05). A sig-
nificant difference was observed in attitudes of junior-
senior and graduate (p < .05).

An eta correlation ratio of .42 showed that the
relationship between mean attitudes toward wildlife and
respondents' classification was a very strong one as
17.2 percent of the variance in attitude scores was
accounted for by the fact that respondents were in different
classifications. Table VI shows the table of mean by
college classification.

<div style="text-align:center">

Attitudes Toward Wildlife: Parents'

Occupation

</div>

Question 4: Do African students whose parents have
different occupations significantly differ in their attitudes
toward wildlife?

Parents' occupation was divided into three groups:
farming, business, and civil service. The three occupations
of farming, business, and civil service had mean attitudes
of 2.67, 3.61, and 3.44, respectively. A significant

difference was observed for parents' occupation ($F = 13.10$, $df = 2/111$, $p < .01$), indicating parents' occupation is significant in determining African students' attitudes toward wildlife. The probability of obtaining different wildlife attitudes between students with different parents' occupation will occur by chance less than 1 time in 100.

TABLE VI

RESPONDENTS' MEAN ATTITUDES BY CLASSIFICATION TOWARD WILDLIFE

Source of variance	df	Sum of Squares	Mean Squares	F-ratio	Prob.
Between Fresh-Soph., Jun.-Sen., Graduates	2	14.64	7.32	11.62	< .01
Within Fresh-Soph., Jun.-Sen., Graduates	111	70.29	.63		
Total	113	84.93			

Students whose parents are farmers had an unfavorable attitude toward wildlife while students whose parents are in business and civil service had a slightly favorable attitude toward wildlife.

Gap tests indicated there was a significant difference between farming and business, farming and civil service

(p < .05). But no significant difference between business and civil service (p > .05). Table VII shows the table of mean by parents' occupation.

TABLE VII

RESPONDENTS' MEAN ATTITUDES BY PARENTS' OCCUPATION
TOWARD WILDLIFE

Source of variance	df	Sum of Squares	Mean Squares	F-ratio	Prob.
Between farmers, business, civil service	2	16.23	8.12	13.10	< .01
Within farmers, business, civil service	111	68.5	.62		
Total	113	84.73			

An eta correlation ratio of .44 indicated there was a significant difference in mean attitudes toward wildlife and parents' occupation as 19.2 percent of the variance in attitude scores was accounted for by the fact that respondents were from different parents' occupation.

Attitudes Toward Wildlife: Academic

Discipline

Question 5: Do African students in science and non-science majors significantly differ in their attitudes toward wildlife?

Mean attitudes of students in science and non-science majors were 3.1 and 3.5, respectively. A mean difference of .40 was not significant ($F = .73$, $df = 112/1$, $p > .05$), indicating that academic discipline did not play a significant part in determining African students' attitude toward wildlife. Probability of obtaining different wildlife attitudes between students in different academic discipline will occur by chance more than 5 times out of 100.

Since mean attitudes for both students in science and non-science majors were 3.1 and 3.5, respectively, they favor wildlife conservation in Africa.

An eta correlation ratio of .08 showed that the relationship between mean attitudes and academic discipline was a very weak one. Less than 1 percent of the variance in attitude scores was accounted for by the fact that students were from different academic disciplines. The table of mean by academic discipline is shown in Table VIII.

Attitudes Toward Wildlife: Background

Question 6: Do African students from different cultural backgrounds, urban and rural, significantly differ in their attitudes toward wildlife?

TABLE VIII

RESPONDENTS' MEAN ATTITUDES BY ACADEMIC DISCIPLINE
TOWARD WILDLIFE

Source of Variance	df	Sum of Squares	Mean Squares	F-ratio	Prob.
Between science and non-science	1	.36	.36	.73	> .05
Within science and non-science	112	55.27	.49		
Total	113	55.63			

Mean attitude for respondents from urban area was 2.9, while mean attitude for respondents from rural area was 4.14. A mean difference of 1.24 was significant ($F = 80.31$, $df = 1/112$, $p < .01$), indicating respondents' background is significant in determining African students' attitudes toward wildlife. Probability of obtaining different wildlife attitudes between respondents from different backgrounds will occur by chance less than 1 time in 100.

Students from urban area were unfavorable toward wildlife as their mean attitude was 2.9. Students from rural area had a mean attitude score of 4.14 indicating they are highly in favor of wildlife conservation in Africa.

An eta correlation ratio of .65 indicated that the

relationship between mean attitude and background is a very strong one as 42.3 percent of the variance in attitude score was accounted for by the fact that respondents were from different backgrounds.

Table IX shows respondents' mean by backgrounds.

TABLE IX

RESPONDENTS' MEAN ATTITUDES BY BACKGROUNDS
TOWARD WILDLIFE

Source of Variance	df	Sum of Squares	Mean Squares	F-ratio	Prob.
Between urban and rural	1	40.96	40.96	80.31	< .01
Within urban and rural	112	57.24	.51		
Total	113	98.20			

CHAPTER V

SUMMARY, CONCLUSIONS, AND
RECOMMENDATIONS

Summary

The study explored the question "Do demographic variables such as age, sex, education, academic major, background, and parents' occupation affect African students' attitudes toward wildlife?"

The population surveyed was African college students at Oklahoma State University. Two hundred copies of opinionnaires with 12 wildlife attitude statements were distributed to students and 114 were returned.

A single-factor analysis of variance was used to test for significance of mean attitudinal differences between levels of each variables. Eta correlation ratios explained the strength of the relationship between the dependent variable of attitude toward wildlife and the independent variables of sex, age, education, background, academic major, and parents' occupation.

The three occupations of farming, business, and civil service had a mean attitude score of 2.67, 3.61, and 3.44, respectively. Mean differences were significant showing that parents' occupation is significant in determining

attitudes toward wildlife. Students whose parents were farmers had negative attitudes toward wildlife conservation, probably because wildlife eat livestocks on farmland. Those students whose parents were business oriented had a more positive attitude toward wildlife. An explanation of this may be that as the parents of these students are wealthy, (business pays more than any other occupation in Africa), they can afford to take their children on expensive pleasure tours of wild and wilderness areas.

An eta correlation ratio indicated there was a significant difference in attitudes toward wildlife and parents' occupation.

A significant difference was observed between attitudes toward wildlife and college classification. The correlation ratio showed there was a strong relationship between attitudes toward wildlife and college classification. Respondents from the freshman-sophomore classification favored wildlife conservation more than respondents from junior-senior, and graduate classification. Respondents from junior-senior classification had a mean attitude of 2.92, indicating that this group was slightly negative toward wildlife conservation while respondents from freshman-sophomore and graduate group were positive toward wildlife conservation. They had a mean attitude of 3.69 and 3.58, respectively.

A mean difference of 1.24 was significant indicating that respondents' background was significant in determining

African students' attitudes toward wildlife conservation in Africa. Respondents from rural areas had a mean attitude of 4.14, showing that they had a very positive attitude toward wildlife conservation, while respondents from urban areas had a negative attitude toward wildlife with a mean attitude of 2.9. An eta correlation ratio of .65 indicated that the relationship between mean attitude and background is a very strong one.

The mean difference of African students in both science and non-science majors was too small to be significant. African students in both science and non-science majors favored wildlife conservation. Their mean attitudes were 3.1 and 3.5, respectively. An eta correlation ratio showed weak relationship between wildlife attitudes and academic discipline.

Sex was not a significant factor in the mean attitudes of African students. A difference of .02 between male and female was not large enough to be significant. The correlation ratio showed a weak relationship between sex and attitudes toward wildlife. A mean of 3.33 for males and 3.35 for females indicated however, that both males and females were in support of wildlife conservation in Africa.

The correlation ratio showed a weak relationship between age and attitudes toward wildlife. Respondents from the two age groups of 19-29 and 30 and above were both positive toward wildlife. Their mean attitudes were 3.41 and 3.38, respectively. But a difference of .03 was too

small to be significant.

Conclusion

The findings of this study indicated that African
students at Oklahoma State University were around the
neutral point in opinions about wildlife conservation
in Africa. This suggests that African students at Oklahoma
State University need to be informed of the need for and
importance of conservation. Without educating the public,
wildlife conservation would seem impossible.

Mean difference observed between college classification
was significant. African students in the junior-senior year
were negative toward wildlife conservation and showed a need
to be informed and be persuaded of the importance of wild-
life conservation.

Respondents in freshman-sophomore, and graduate
classification were positive toward wildlife conservation.
The aim of wildlife communicators should be to design
messages that can help reinforce their positive attitudes.

There was also a significant difference between
attitudes toward wildlife and parents' occupation. African
students whose parents were farmers tend to be negative
toward wildlife conservation. Therefore, major effort is
needed here to move attitude to pro-conservation. Communi-
cators need to design messages which will reinforce the
attitudes of respondents whose parents were civil servants
and business oriented.

Students' background was very significant in deter-
mining attitudes toward wildlife. African students from
urban areas were negative toward wildlife, while students
from rural areas were positive toward wildlife. Wildlife
communicators will design messages to reinforce the atti-
tudes of African students from rural areas. Wildlife
information on both importance and use of wildlife will
be directed toward urban areas. It is assumed that if
the audiences are more educated on wildlife, their attitudes
can be changed from anti-wildlife to pro-wildlife.

Respondents in both science and non-science majors did
not differ significantly in their attitudes toward wildlife
conservation. Both were positive toward wildlife but the
mean difference between the two was not significant.

Also, African students in age groups 19-29 and 30 and
above were both positive toward wildlife conservation in
Africa. But there was no significant difference observed
between attitudes and age.

Respondents did not differ significantly in their
attitudes by sex. Both male and female favored wildlife
conservation, but the difference between the two was too
small to be significant.

Recommendations

The relationship between attitudes toward wildlife
and demographic variables were surveyed in order that the
investigator could determine which demographic variable

affect African students' attitude toward wildlife. The results would allow communicators to design information on wildlife which would be directed at those with negative attitudes toward wildlife.

The main shortcoming of this study was its limited scope. The survey was limited to only African students at Oklahoma State University. The findings may not reflect the true feelings of the African student population, but they should serve as a springboard for future research. The investigator recommends undertaking research exploring the attitudes toward wildlife of the entire African population. Such studies could determine if university classification, occupation and cultural background do make a difference in the attitudes of Africans toward wildlife. Such studies should enable communicators to better inform the African public of the need for and importance of wildlife conservation.

Many universities in Africa do not offer wildlife ecology as a major. This limits the number of people who could be educated to become wildlife communicators, and in turn, reduces the number of people who are informed about wildlife conservation. This writer recommends that the African government establish wildlife departments in universities to increase public awareness of wildlife conservation.

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APPENDIXES

APPENDIX A

QUESTIONNAIRE AND COVERING LETTER

QUESTIONNAIRE

For each item below, please indicate the degree to which you agree or disagree by checking (√) the response which best describes your feelings. The scale runs from "strongly agree" to "agree", "neutral", "disagree", and "strongly disagree", from left to right.

1. Hunting rhinos should be banned because they are an endangered species.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

2. Nothing is wrong with using wildlife as guinea pigs to conduct scientific research.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

3. Pesticides should not be used on farmlands where wildlife is found.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

4. More serious problems confront Africans than protecting wildlife.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

5. People who hunt elephants for ivory should be prosecuted.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

6. Species that are becoming extinct should be protected for the benefit of future generations of people.

   Strongly agree ___ ___ ___ ___ ___ Strongly disagree

7. Money could be spent more wisely than using it to set aside parks for vanishing wildlife.

   Strongly agree ___ ___ ___ ___ ___ Strongly disagree

8. Pollution of waterways endanger wildlife and should be reduced.

   Strongly agree ___ ___ ___ ___ ___ Strongly disagree

9. There is no need for so much concern about danger to the continued existence of wildlife.

   Strongly agree ___ ___ ___ ___ ___ Strongly disagree

10. Hunting of wildlife for sport is fun and licenced hunting should be encouraged.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

11. Africans need more space for urbanization rather than saving space for wildlife.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

12. More research is needed to find ways to increase the population of vanishing species.

    Strongly agree ___ ___ ___ ___ ___ Strongly disagree

PERSONAL DATA

1. Sex: 1. ___ Male

         2. ___ Female

2. Age: 1. ___ 19-29

            2. ___ 30-39

            3. ___ 40 and above

3. Classification:

            1. ___ Freshman

            2. ___ Sophomore

            3. ___ Junior

            4. ___ Senior

            5. ___ Graduate

4. Occupation of parents:

            1. ___ Farming

            2. ___ Business

            3. ___ Civil Service (Please indicate)_____

5. Academic discipline:

            1. ___ Science

            2. ___ Non-science

6. Background:

            1. ___ Rural

            2. ___ Urban

School of Journalism and Broadcasting
Oklahoma State University
Stillwater, Oklahoma 74074
U. S. A.

March 3, 1982

Fellow Africans,

I am conducting a survey of the attitudes of African
students at Oklahoma State University toward wildlife.   I
really need your help.

The items in the attached opinionnaire concern
attitudes toward wildlife.   I believe that if you take
just 10 minutes to complete the opinionnaire, you will
contribute to solving one of our hydra-headed problems.

Please respond to each item with your immediate
reaction.   Do not ponder how others will expect you to
respond.   Your thinking alone is being sought because it
is valuable.

Thank you very much for your cooperation and prompt
response.

                    Yours sincerely,

                    Lizzie Awokulehin

APPENDIX B

A LIST OF THE ENDANGERED ANIMALS OF AFRICA
AND THEIR DISTRIBUTIONS

ENDANGERED ANIMALS OF AFRICA AND

THEIR DISTRIBUTIONS

Names	Distributions
African elephant	Angola, Rhodesia, parts of Nigeria
Black rhinoceros	Zululand, Southwest Africa, Somaliland
White rhinoceros	Kenya
Eland	East Africa
Sable antelope	South Africa
Wildbeest	Rhodesia, Kenya, Northern Tanzania
Kudu	Nigeria, Kenya, Somaliland
Lion	Central Africa, Congo basin, Kenya
Kob	South Africa
Topi	Central Africa

VITA `

Elizabeth Jumoke Awokulehin

Candidate for the Degree of

Master of Science

Thesis: AN ATTITUDE SURVEY OF AFRICAN STUDENTS AT OKLAHOMA
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Major Field: Mass Communications

Biographical:

Personal Data: Born in Offa, Kwara State, Nigeria,
May 8, 1957, the daughter of Mr. and Mrs. Anthony
T. Awokulehin.

Education: Graduated from Aiyedade District Council
Grammar School, Ikire Ibadan, Nigeria, in
September, 1975; received the Bachelor of Science
in Arts and Science degree from Oklahoma State
University, Stillwater, Oklahoma, in 1980; com-
pleted requirements for Master of Science degree
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Professional Experience: General reporter, The Daily
O'Collegian, Oklahoma State University, Stillwater,
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