

**FEEDING ECOLOGY OF WESTERN HARTEBEEST *ALCELAPHUS
BUSELAPHUS PALLAS 1766* IN BORGU SECTOR OF KAINJI LAKE
NATIONAL PARK, NEW BUSSA, NIGERIA.**

By

¹Ejidike, B. N. and ²Ajayi, S. R.

¹Department of Ecotourism and Wildlife Management, Federal University of Technology, Akure Ondo State, Nigeria

²Federal College of Wildlife Management, New Bussa, Niger State, Nigeria

E-mail rychy4christ2010@yahoo.com

Correspondence Author bndike@yahoo.com

Abstract

*An investigation into food and feeding habits of western hartebeest *Alcelaphus buselaphus* at Borgu sector of kainji lake national park was conducted. Western hartebeest *Alcelaphus buselaphus* being herbivore was assessed based on the plant materials- parts of plant the animal feed upon, hours of feeding. The animal was observed using direct method of observation during the hours of 0700 -1400hours and 1600 - 1830hours thrice in a week during 120 days of the study. The results indicated that western hartebeest feed and move in herds consisting of both sexes. Western hartebeest herds were sighted in different tracks in the park within the period of the study. It is a grazer as well as a browser, and it was observed to be browsing on *Pilisotigma thronningii*, *Azelia africana*, *Annona senegalensis* in the park. It was observed to be resting within the period of 1200-1630hours in the park in both standing and lying positions. From the results, the sex population structures of western hartebeest expressed in percentage is male to female 33% and 67% respectively. Variation existed in population density in different tracks and this might be due to the differences in vegetation types of the different vegetation zone in the park. It was observed that while moving in herd western hartebeest is not aggressive, and they associate freely with other large, medium and small sized ungulates in the study area.*

Key words: Western hartebeest, herbivore, plant materials, vegetation zone, non aggressive

IJAFS 4, 2013, 13: 510- 514

Accepted for publication, September, 2013.

Cite as IJAFS 4 (1&2), Pp 510–514

Introduction

Each creature has a unique niche in ecosystem and the system has to be balanced for wellbeing of every living organisms. Research and conservation activities in protected areas are mostly directed towards ascertaining and maintaining the conditions of ecosystem for continuity of biodiversity resources. In most African countries, wildlife represents the principal sources of animal protein for the rural people (Dutoit, 2002), as a result, it demands proper management. However, population of wild animal species in parks usually dwindles due to some natural and anthropogenic factors such as disease outbreak, poaching and habitat destruction. These are among the reasons of advocating for proper management and update of the resources in protected areas. Western hartebeest is one of the endangered wild animal species (IUCN, 2008).

Maintenance of wild animals at a sustainable carrying capacity in a given habitat aids in balancing ecosystem thereby avoiding destruction of the habitat as well as loss of fauna species through death as a result of competition. Minimal depletion of vegetation in a

habitat contributes to the accumulation of carbon dioxide (CO₂) emitted into the atmosphere as well as reducing food and cover of most wild animals. Animal population and carrying capacity of any given area need to be known to avoid destruction of the habitat due to over population of the animal species. Continuous survival of wild animal species in a habitat depends on ability to understand, manage and overcome habitat factors that are detrimental for the animal species.

In most national parks poaching of wild animals for the value attached to their meat and trophies has great influence on their population decline. It is a known fact that poaching and illegal killing of wild animal species in protected and reserved areas has detrimental effect on the animal's population and in most cases enlist some animal species into endangered list especially low prolific species. According to (Aremu, 2005) hartebeest is among the other animal species of poachers target at Kainji lake national park and that is exerting negative pressure on the animal's existence. Western hartebeest is a large mammal that is natural well built (145kg) with height (1.4m) (BWFS, 2008) which poachers easily identified in savanna area where forest is not dense.

Poachers probably hunt the animal for lots of flesh (meat) it contains and the money they realize through its sales when it is caught. Positive increase in population diversity of wild animal species within the habitat carrying capacity is very vital in conservation practices in protected areas. As a result, management of population, food, shelter and cover of wild animals are the basic component of any functional habitat for the animal's survival and multiplication. Renewable natural resources continue to reproduce and regenerate their population as long as environment and breeding stocks are maintained (Ajayi and Idumah, 2010). Conservation of most wild fauna and flora resources in national parks and other protected areas in a nation promote ecotourism and cultural tourism for posterity (Durojaye *et al*, 2010). Nigeria is endowed with wide range of habitats and ecosystems with varying degrees of species diversity within them.

This study aimed at identifying in different tracks food materials and feeding habits of western hartebeest in Borgu sector of Kainji lake national park. The presence of the food materials for western hartebeest in the park would help to ascertain the sustainability of the animal in the habitat. The knowledge of the status of food materials for animal species in a habitat aids in proper management of the animal in terms of stocking, cropping or maintaining the population of the species in the range.

Materials and Methods

The study was conducted in Borgu sector of Kainji lake national park which covers an area of 3,970.02km² that is over 70% of the park area. The park is the premier national park in Nigeria situated in the northern part of the country with its boundary between the Sudan and the Northern guinea savanna (Keay, 1959; Child, 1974) and lies between latitude 9° 45' and 10° 23'N and longitude 3° 40' and 5° 47'E. The park has a total area of 5,340.82km², separated into two distinct non-contagious sectors. Reconnaissance survey was carried out and based on it seven tracks transects with a mean distance of 4km² each was marked. This reconnaissance survey was conducted so as to be sure that hartebeest is still in existence in the park before embarking on the study. Binocular (Mcsco Seheld 8m/9800000m) was used in sighting the animals at 25-60m away from the observation point.

Animal observation

Direct method

Western hartebeest were observed directly as they were feeding and carrying out other daily activities in the park and data collected were recorded on the designed observation sheet. A total of seven tracks were randomly selected for observation of western hartebeest in Borgu sector of Kainji lake national park. Each of the seven tracks in the vegetation zones was surveyed. A 4-wheel drive vehicle at a speed of 20km/hour was used to observe western hartebeest feeding between 0700-1400hours and 1600-1830hours thrice a week.

Statistical analysis

Data collected were subjected to descriptive analysis.

Results and Discussion

The results of the study indicated that western hartebeest *Alcelaphus buselaphus* is a browser (browses on *Pilisotigma thronningii*, *Afzelia africana*, *Annona senegalensis*) as well as a grazer (Table 1), this confirms the report of Aremu *et al*, 2001 that *Alcelaphus buselaphus* feeds on both grasses and browse plant which enhances its survival in the range. The animal feeds mostly during the early hours from 0700-1100hours and late afternoon from 1630- 1830hours proving the animal to be diurnal, this is also the report of IUCN (2008) that western hartebeest are primarily diurnal and rest in shed areas during the hot daytime. *Alcelaphus buselaphus* found feeding on grasses especially *Andropogon gayanus* and *Andropogon tectorum* agrees with the statement that the animal feeds predominantly on intermediate height of mixed grasses (IUCN, 2008). According to Schuette *et al*, (1998) *Alcelaphus buselaphus* dietary intake consists of 55-75% grass and 25-45% leaves, fruits, pods and seeds and these plant's parts were found to be fed upon by the animal species (Table 1) during the course of the study.

Vitaleria paradoxum seeds are among the food resources western hartebeest fed on in the park and this is in accordance with the report of Schuette *et al*, (1998) on species diversity and plant utilization of the animal species. *Alcelaphus buselaphus* was observed to utilize bark of some tree species especially *Burkea africana*, as food supplement though this was observed to be occasional, showing that tree bark is not the animal's major food material. The animal species were noted to move in herds to different saltlick spots in the park where they cut and chew saltlick deposit in the park, this action is believed to be for sourcing of minerals for their body maintenance. These attribute enhanced the survival of the species during critical times in savanna such as in Borgu sector of Kainji lake national park.

During the course of the work *Alcelaphus buselaphus* was found to be social as it interacts with other animal species (Table 3) in the park, this is in agreement with the statement of Aremu, 2005 that *Alcelaphus buselaphus* share territory with other large and medium size mammals. The population structure of *Alcelaphus buselaphus* was found to concentrate more on Olusegun Obasanjo and Hussain Mashi tracks (*Afzelia* mixed woodland and *Isobertina tomentosa* woodland) probably due to vegetation of the areas which were observed to have more grasses and tree species the animal feed upon.

Conclusion

The family Alcelaphinae in which the western hartebeest *Alcelaphus buselaphus* belong is on the present global conservation focus. Therefore, there is need for knowledge on

the food availability for proper management of the animal species for its sustenance in the park.

Table 1. Plant species utilized by western hartebeest *Alcelaphus buselaphus* in different tracks in Borgu sector of Kainji lake national park, New Bussa, Nigeria

Family name	Scientific name	Common name	Status	Part utilized
Poaceae	<i>Andropogon gayanus</i>	Gambia grass	Grass	Leaves, stem
Poaceae	<i>Andropogon tectorum</i>	Giant bluestem	Grass	Leaves, stem
Poaceae	<i>Panicum maximum</i>	Guinea grass	Grass	Leaves stem
Poaceae	<i>Pennisetum poystachion</i>	feathery	Grass	Leaves, stem
Poaceae	<i>Hyperrhenia rufa</i>	Thatching grass	Grass	Leaves
Poaceae	<i>Hyperrhenia dissolute</i>	-	Grass	leaves
Poaceae	<i>Setaria barbata</i>	Bristly foxtail grass	Grass	Leaves, stem
Caesalpiaceae	<i>Afzelia Africana</i>	Igi apa (Y)	Tree	Seed, leaves
Caesalpiaceae	<i>Piliostigma thonningii</i>	Igi abafe (Y)	Tree	Leaves, pod
Sapotaceae	<i>Vitaleria paradoxum</i>	Shea butter	Tree	Seed
Combretaceae	<i>Combretum molle</i>	Okuku (Y)	Tree	leaves
Rubiaceae	<i>Gardenia aqualla</i>	Orunwo abo (Y)	Shrub	leaves
Rubiaceae	<i>Gardenia sokoensis</i>	Orunwo ako (Y)	Shrub	Fruits, leaves
Annonaceae	<i>Annona senegalensis</i>	Abo (Y)	Shrub	fruits

Y= Yoruba language

Table 2 Vegetation – ecological zone and distribution of western hartebeest *Alcelaphus buselaphus* in Borgu sector of Kainji lake national park, New Bussa, Nigeria

Vegetation zone	Track	Population	%
<i>Afzelia africana</i> woodland	Mumudi Lapai	12	4.9
<i>Burkea africana</i> - <i>Detarium micocarpum</i> wooded savanna	Kali track	31	12.7
Riparian forest	Shehu shagari	8	3.3
<i>Isobertina</i> mixed woodland	Bukar Shuaib	44	17.9
<i>Isobertina tomentosa</i> woodland	Hussain Mashi	60	24.5
<i>Isobertina</i> , <i>Afzelia</i> mixed woodland	Olusegun Obasanjo	72	29.4
<i>Isobertina doka</i> woodland	Anwal M. Ibrahim	18	7.3

Table 3 Mammals associating with western hartebeest *Alcelaphus buselaphus* in Borgu sector of Kainji lake national park, New Bussa, Nigeria

Scientific name	Common name
<i>Hippotragus equines</i>	Roan antelope
<i>Tragelaphus scriptus</i>	Bush buck
<i>Papio Anubis</i>	Baboon
<i>Phacochoerus aethiopicus</i>	Warthog
<i>Cephalophus rufilittus</i>	Red flanked drinker
<i>Syncerus caffer</i>	African buffalo
<i>Panthera leo</i>	Lion

References

- Ajayi, C .A. and Idumah, F.O.. Impacts of exploitation of forest resources on bushmeat supply and consumption in Nigeria. Proceedings of the 2nd Biennial National Conference of the Forests and Forest products Society (2010).
- Aremu, O. T., Elekhizor, B. T., and Obasoge, F. O. Abundance, distribution and feeding ecology of *Alcelaphus buselaphus* in Old Oyo national park, Nigeria. *The Nigeria Academic forum Journal* Vol. 1(2) (2001), pp. 149-153
- Aremu, O.T.. Ecology, conservation and socio-economic potentials of African buffalo *Syncerus caffer nanus* in Kainji lake national park, Nigeria. PhD thesis, Department of Forestry and Wildlife Management, university of Agriculture, Abeokuta (2005)190pp.
- Balmford, A. and Gaston, K. J.. Why biodiversity surveys are good value. *Science* Vol. 398 (1999), pp. 204-205.
- Child, S. G.. Ecological survey of the Borgu game reserve FAO Technical Report no. 4. FI: (1974) SF/NIR.24
- Durojaye, G. A., Ejidike, B. N. and Bello, M. A. Relative abundance and distribution of roan antelope *Hippotragus equinus* in Borgu sector of Kainji lake national park, Nigeria. Proceedings of the 2nd Biennial National Conference of the Forest and Forest products Society. (2010) Pp 501-504
- Dutoit, J. T. Wildlife harvesting guidelines for community based wildlife management: A Southern African perspective. *Biodiversity and Conservation*. Vol. 4 (2002) pp. 140-146
- IUCN SSC Antelope Specialist Group *Alcelaphus buselaphus* in: IUCN 2008. Red list of the special Group *Alcelaphus buselaphus*
- Keay, R. W. J. (1959). An outline of Nigeria vegetation. 3rd Edition, Government Press, Lagos. (2008)
- Schuetz, J. D., Leistic, J. R., Lochmiller, J. J.. Diets of hartebeest and roan antelope in Burkina Faso Support of the long face hypothesis. *Journal of Mammalogy*, Vol.79 (2): (1998), pp. 426-436
- Western Hartebeest. Blue Western Forest Safaris. Retrieved 2008-08-14. <http://www.wild-about-you.com/GameWesthart.htm>