ROAN ANTELOPE (*HIPPOTRAGUS EQUINUS* DESMAREST1804) FOOD PLANTS AND FEEDING HABITS IN THE KAINJI LAKE NATIONAL PARK, NIGERIA.

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ABSTRACT

The habitat changes in Borgu sector of Kainji lake National Park affects the food plants and feeding habits of roan antelope. The changes which are usually seasonal variation in climate and the effect of uncontrolled bush burning by poachers. The objectives of the study were to determine the food plants and feeding habits of Roan Antelope. A total of 97 observations were made consisting of 48 in the wet season (May – October) and 49 in the dry season, while the animals were feeding. Observations were made with the naked eyes and where distances were far, binocular was used in observing food plants and feeding habits (graze /browse) of Roan. The result on food plants and feeding habits of roan showed that eight forage plants were fed upon by roan from four different families (Poaceae, Rubiaceae, Caesalpiniaceae and Verbenaceae. The forage species were; Hyparrhenia rufa, H.cyanescens, Andropogon tectorum, A.gayanus, Gardenia aquala, G. ternifolia, Afzelia africana and Vitex doniana. The poaceae family was dominant with four species. Rubiaceae had two species while Caesalpiniaceae and Verbenaceae had a single species each. The study further revealed that roan preferred Andropogon gayanus (28.9%) and Hyparrhenia rufa (21.6%) both in wet and dry seasons. Roans were observed to graze on leaves of Hyparrhenia rufa, H.cyanescens, Andropogon tectorum and Andropogon gayanus. Furthermore, Roans were observed to browse on fruit / leaf part of Gardenia aquala, leaf part of G. ternifolia, tender leafy part of Azelia africana and fruits of Vitex doniana.

Key words: *food, habit, season, Roan, utilized*

INTRODUCTION

The Borgu sector of kainji lake national park sustains a diverse array of wild animals besides a large number of small herbivores. Wild animals of the area are typical of those of the large Mammals associated with Guinea Savanna of West Africa (Ayeni, 2006).The composition of the Mammalian fauna include species associated with wooded savanna such as Hartebeest (*Alcelaphus buselaphus*),Roan antelope (*Hippotragus equinus*), Oribi (*Ourebia ourebi*), Patas monkey (*Erythrocebus*) as reported by DRB (2003).Roan Antelope are grazers of medium to short grasses belonging to dominant species such as red Oat grass (Themeda), Thach grass (Hyparrhenia) and Couch grass (Digitaria) as reported by Jacques van Rooyen (2009). Roan occasionally browse on shrubs or herbs and pick up Acacia pods in the dry season and drink regularly (Erb,1993 and Kingdon, 1997).They feed on grasses and other foliage in the morning and evening hours and retreat to more densely wooded areas during the middle of the day (Schuette *et al.,*1998). Adanje and Ottichilo (1999) reported that roans are mainly grazers (90%) and that browsing (10%) is rare. They seemed tolerant of stemmy grass lands growing on nutrient richer substrate (Heitkonig, 1993). In Nylsvlei Nature Reserve, Limpopo province, Heitkonig (1993) found that roan antelope preferred grass swards with a favorable green: old leaf ratio on alluvial soils and a favorable leaf: stem ratio on felsitic and sand stone soils. Areas with grass consisting of very high stem densities were avoided. During the dry season roan preferred areas that offered higher densities of green leaves. In Nylsvlei, the diet of roan consisted of 84% of grass and 8.2% of browse with no significant increase in browse during a specified season (Heitkonig, 1993). Knoop and Owen ï Smith (2006) found a significant difference in plant species as well as grazing area selection by roan antelope in the NõWashitsumbe enclosure. They further reported the extent of plant species and grazing area preference was largely influenced by season rainfall patterns. It has been observed that different ungulates species have varying food and feeding habits and some are purely grazers such as Kiang, others such as Serow mostly browse while

species such as Musk deer are mixed feeders ï graze and browse (Anjali *et al.,* 2003). Roan antelope will browse if grazing forage is poor and the preferred feeding height is 15 ï 150 cm and green shoots are often grazed down to a height of 2cm (Kingdon, 1997). Roan antelope feed on grasses and other foliage in the morning and evening hours and retreat to more densely wooded areas during the middle of the day (Schuette *et al*., 1998). This study is aimed at identifying food plants species and feeding habits of Roan antelope in Kainji lake National Park.

MATERIAL AND METHODS

Study Area

The study was conducted in Borgu sector of Kainji Lake National Park which covers an area of 3,970.02km$^{2.}$ The park is located at the boundary between the Sudan and the Northern Guinea Savanna (Keay, 1959) and lies between latitude 9^0 40' and 9^0 23'N and longitude 3^0 40' and 5^0 47'E (Fig.1).The major vegetation types of the park includes: *Burkea- Detarium*, *Terminalia macrocarpum* wooded savanna, *Isoberlinia tomentosa* woodland, *Diospyros mespiliformis* dry forest and *Afzelia africana, Isoberlinia* doka, Riparian Forest and Oli river Complex (Afolayan, 1978).

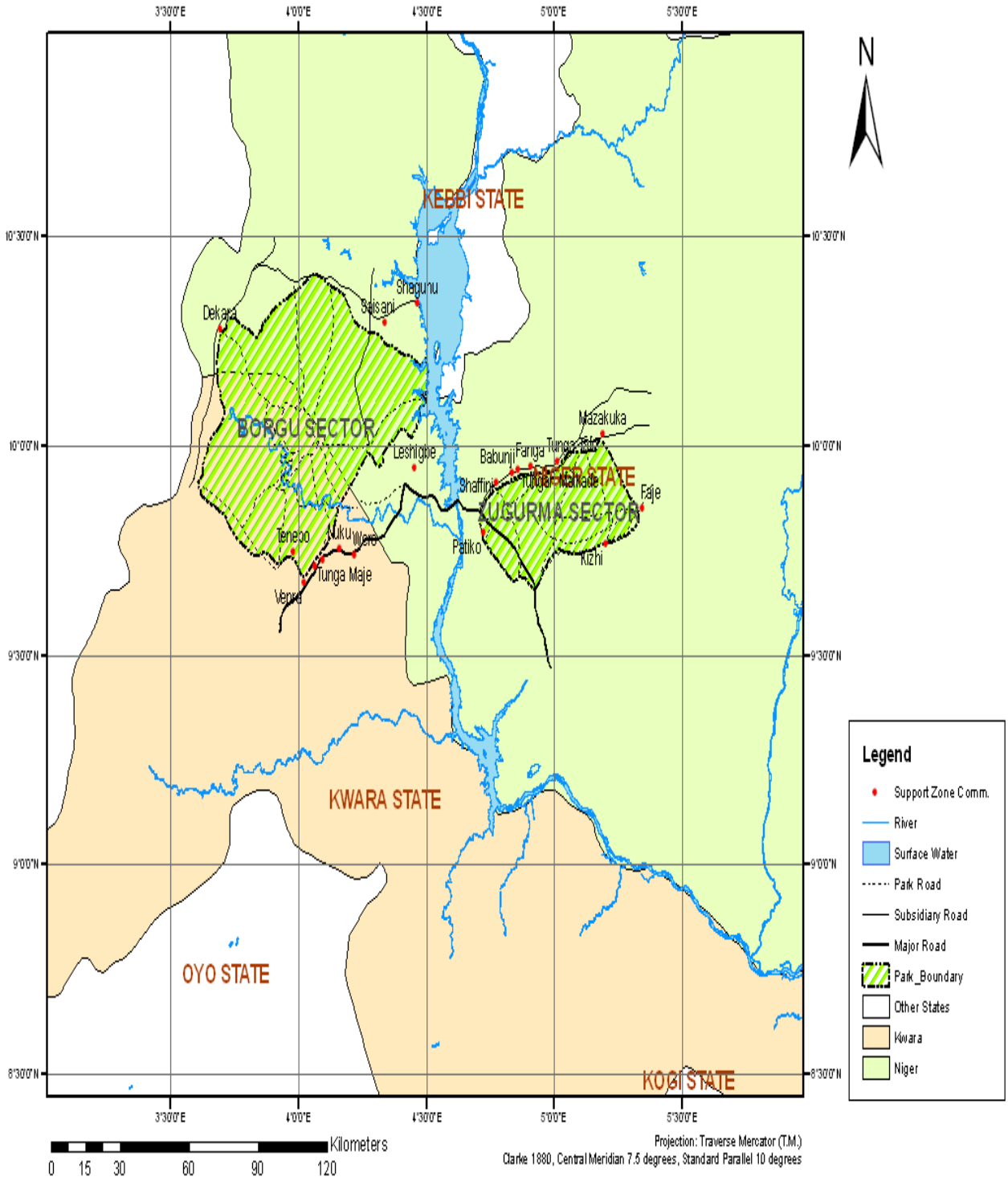

Figure 1: Map of Kainji Lake National Park showing Borgu and Zugurma Sectors. SOURCE: Tuna (1992)

Methods

Prior to data collection, a reconnaissance survey was carried out to establish the feeding sites and routes of Roan antelope in the study area. The researcher and his assistant took cover against the direction of wind since Roan has good sense of smell. Observations were done on the food plant species and feeding habit of Roan. Whenever a herd of Roan antelope were spotted either with the naked eyes or the aid of binoculars (300mm Zenith Model B122), the animals were observed carefully as they feed (graze / browse) taking records of plants species fed upon and their parts. As soon as the animals moved out, the places were further examined to take records of plants that were not initially recorded and later transferred in a food and feeding habit standard data collection sheet. The exercise commenced daily from 07.00hrs ï 11.00hrs in the morning and 16.00hrs ï 18hrs in the evening. The exercise took five consecutive days per month for three years of field study thus spanning three dry seasons (November ï April) and three wet seasons (May ï October). The total of 97 observations on feedings were made during the study with 48 frequency of feedings in the wet and 49 frequency of feedings in the dry seasons respectively. Roan are gregarious animals and feed in herds which could be single or many.

Data Analysis

The data collected on food plants were pooled together based on season and were analyzed using descriptive statistics; frequency and percentages and presented in Tables.

RESULTS

The total of four families; Poaceae, Rubiaceae, Caesalpiniaceae and Verbenaceae were identified. The food plant species fed upon by Roan antelope were eight. These include *Hyparrhenia rufa, H. cyanescens*, *Andropogon tectorum* and *A.gayanus* belonging to the Poaceae family. The Rubiaceae family had *Gardenia aquala* and *G. ternifolia*, the Caesalpiniaceae had *Afzelia africana* and the Verbenaceae had *Vitex doniana*. The frequencies of Roan feeding on *Andropogon gayanus* was 17 represented by 35.4%, *Hyparrhenia rufa* with 16 frequencies of feeding represented by 33.3%,*Andropogon tectorum* with 8 frequencies of feeding with 16.7% while *Hyparrhenia cyanescens* with 7 frequencies

of feeding had 14.6% in the wet season. In the dry season; *Andropogon gayanus* recorded 11 frequencies of feeding with 22.5%, *Hyparrhenia cyanescens, Andropogon tectorum, Gardnia aquala, G.ternifolia* and *Afzelia africana* recorded 6 frequencies of feedings and 12.2% each respectively. *Hyparrhenia rufa* recorded 5 frequencies of feeding and 10.2%. The least observation was on *Vitex doniana* which recorded 3 frequencies of feedings and 6.1%. In terms of parts of plants fed upon, *Gardenia aquala* leaf/fruit parts were fed upon, while the other forage plants of Poaceae family leaf parts were fed upon (Table 1).The Results in table 2 showed *Andropogon gayanus* with feeding frequencies of 28 had 28.9%.*Hyparrhenia rufa* with feeding frequencies of 21 had 21.6%, *Andropogon tectorum* and *Hyparrhenia cyanescens* had frequencies of 14 and 13 with frequencies of 14.4% and 13.4% respectively. *Gardenia aquala*, *G.ternifolia* and *Afzelia africana* each had 6 frequencies of feeding observations and 6.2% each while the least plant feeding frequency observation was *Vitex doniana* with 3 frequencies and 3.1%.

DISCUSSION

The findings of the study revealed that the frequencies of feeding on *Andropogon gayanus* and *Hyparrhenia rufa* of Poaceae family both in wet and dry seasons by Roan antelope explains why Roans are mostly grazers. *Gardenia species*, *Afzelia africana* and *Vitex doniana* were fed upon by Roans only in the dry season. Knoop and Owen-Smith (2006) asserted to this fact that Roan antelope are mostly grazers but do browse during the critical period of the year. It was also observed that during the wet and early dry season, Roans were observed to graze on leaf parts of *Andropogon gayanus* and *Hyparrhenia rufa*, while in the late dry season, Roans were observed browsing mostly on fruits and leaf parts of *Gardenia species*. This was also observed in the faecal droppings of Roan especially during the peak of dry season (March ï April).The animals were striving to maintain themselves as the body appearance and weight seems to have reduced. Similarly, Heitkonig and Owen ï Smith (1998) reported that food quality appeared more important in the early wet and late dry seasons. The most obvious component of habitat for any animal is food. Availability

of food usually changes with season, so food may be plentiful in one season and critically short in another. Food quantity, rather than quality appeared to attract roan to foraging sites in the late wet and early dry seasons. They further stated that Roan nevertheless seemed tolerant of stemmy grass lands growing on nutrient rich substrate.

Family	Plant Species	Part Utilized	Frequency (%)	
			Wet	Dry
Poaceae	*Hyparrhenia rufa*	Leaf	16 (33.3)	5 (10.2)
ñ	*H. cyanescens*	ñ	7 (14.6)	6 (12.2)
ñ	*Andropogon tectorum*	ñ	8 (16.7)	6 (12.2)
"	*A. gayanus*	ñ	17 (35.4)	11(22.5)
Rubiaceae	*Gardenia aquala*	Leaf/fruit	0 (0)	6 (12.2)
ñ	*G. ternifolia*	Leaf	0 (0)	6 (12.2)
Caesalpiniaceae	*Afzelia africana*	ñ	0 (0)	6 (12.2)
Verbenaceae	*Vitex doniana*	Fruit	0 (0)	3 (6.1)
Total			**48(100)**	**49 (100)**

Table 2: Forage plant species Utilized by Roan Antelope as food in Kainji Lake National Park (2007 – 2010).

Family	Plant Species	Part Utilized	Frequency	(%)
Poaceae	Hyparrhenia rufa	Leaf	21	21.6
ñ	H. cyanescens	ñ	13	13.4
ñ	Andropogon tectorum	ñ	14	14.4
ñ	A. gayanus	ñ	28	28.9
Rubiaceae	Gardenia aquala	Leaf/fruit	6	6.2
ñ	G. ternifolia	Leaf	6	6.2
Caesalpiniaceae	Afzelia africana	ñ	6	6.2
Verbenaceae	Vitex doniana	Fruit	3	3.1
Total			**97**	**100**

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