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Seasonal variation in plants consumption pattern by foraging Olive Baboons (*Papio anubis.* Lesson, 1827) inside Kainji Lake National Park, Nigeria

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ABSTRACT: This study which lasted for eight (8) months in 2011, covering the period of dry and wet seasons examined seasonal plant species consumed by foraging Olive baboon (*Papio anubis*) inside Kainji Lake National Park, Nigeria. Data were collected in the morning between 8.00am - 12.00pm and in the evening between 2.00pm - 6:00pm. Plant species and their parts eaten were monitored and identified through direct observation and faecal analysis. It was observed that seven plants species ((A*ndropogon gayanus, Strychnos spinosa, Nuclear latifiora, Vitelaria paradoxa, Ficus sycomorus, Annona senegalensis* and *Tamarindus indica*) were consumed in the wet season with 303 feeding events while ten plants species (*Detarium macrocarpum, Gardenia sotoemsis, Parkia biglobosa, Piliostigma thonningii, Pterocarpus erinaceus , Prosopis africana, Ficus sycomorus, Xamenia americana, Annona senegalensis* and *Vitex doniana*) were consumed during the dry season with 315 feeding events. The feeding pattern shows that plants with higher nutritional quality were often consumed. Seasonal variation showed slight disparity in the nutrient composition of the identified plants. It was concluded that seasonal variations do affect the plants consumption pattern of foraging Olive baboon and that ex-situ conservation of these plants is imperative for sustainable captive management of Olive baboon. © JASEM

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Introduction

Essential to an understanding of the ecology of wild animals capable of ex-situ conservation is knowledge of wild animal nutrition. Foraging and feeding have played essential role in the adaptation and evolution of all animals (Altmann, 1998). Many aspects of primate behaviour and ecology can be understood through the study of their nutritional requirements and ecology; a valuable tool in primate conservation (Chapman *et al*., 2003). Interestingly, Olive baboon is not bound to a specific food source (Altmann, 1998). A study by Post (1982) informed that the feeding behaviour of many primate species is easily quantified by direct observation. Understanding of primate foraging strategies has been achieved by investigating the chemical basis of their dietary (Whiten *et al*., 1991). In this study, we identified plant species consumed by foraging Olive baboon inside Borgu sector of Kainji Lake National Park (KLNP), Nigeria. Plant parts and seasonal nutritional qualities of the identified plants species was also monitored and examined with a view of providing quantitative and qualitative information for ex-situ Olive baboon conservation.

MATERIALS AND METHODS

This study was carried-out at Borgu sector of Kainji Lake National Park (KLNP), Nigeria. KLNP is a transitional zone between the Sudan and Northern Guinea Savanna types (DRB 2004).The entire park (Borgu and Zuguruma sectors) which lies between latitude 9° 40′N and 10°23′N and longitude 3° 30´E and 5° 50´E covers a total land area of 5, 321.82km^2. The Borgu sector of the park covers an area of 3,970.02m^2 (Tuna Wildlife Consultants and NARDES, 1983).

Study was conducted in 2011 for eight months between January to April (dry season) and between May and August (wet season). Three visits were made per week between the hours of 8.00am – 12.00pm and 2.00pm to 6:00pm along the existing nature trails used as transects. Both direct observation and faecal analysis was employed to study 2 social groups of Olive baboons with average population of 8 individuals. Direct observation of the animal in the field with the aid of binoculars by using scanning and focal point techniques as described by Dumbar, (1984) was followed. Consumed plants in the same

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location during feeding event were collected, identified at the Federal College of Wildlife Management New Bussa, Niger State and later processed for proximate analysis as described by Association of Official Analytical Chemist (AOAC, 1990). Collected fresh faecal samples were dried before it was broken and sieved using 1mm wire mesh to observe the content under magnifying glasses and low power microscope.

RESULTS AND DISCUSSION

Plant species and plant parts consumed by foraging Olive baboon inside Borgu sector of KLNP in both wet and dry seasons are presented (Tables 1 and 2) below. These plant species differs from the plant species reported by Akinyemi and Kayode (2003) on a similar work from different ecological zone. During wet season, we recorded 303 feeding events on seven plant species whereas 315 feeding events on ten plant species was observed during wet season. Of the seven plant species consumed during wet season, *Andropogon gayanus* stem/leaves was the highest (22.4%), followed by the fruit of *Strychnos spinosa* (18.5%) while the fruit of *Tamarindus indica* was the least consumed (6.6%). Wet season feeding profile indicates that fruits parts were highly consumed whereas seeds and fruits were consumed in same manner during dry season.

Table 1: Plant species consumed by foraging Olive baboon inside KLNP during wet season

Plant species	Frequency	Percentage (%)	Parts Eaten		
			Seed	Fruit	Stem/leave
Andropogon gayanus	68	22.4	-	-	+
Strychnos spinosa	56	18.5	-	+	-
Nuclear latifiora	50	16.5	+	-	-
Vitelaria paradoxa	48	15.8	-	+	-
Ficus sycomorus	25	8.3	-	+	-
Annona senegalensis	36	11.9	-	+	-
Tamarindus indica	20	6.6	-	+	-
Total	**303**	**100**			

+ means Consumed – means Not Consumed

Table 2: Plant species consumed by foraging Olive Baboon in KLNP during dry season

Plant species	Frequency	Percentage (%)	Parts Eaten		
			Seed	Fruit	Stem/leave
Detarium macrocarpum	40	12.8	+	-	-
Gardenia sotoemsis	18	5.8	+	-	-
Parkia biglobosa	*25*	8.0	+	-	-
Piliostigma thonningii	38	12.2	+	-	-
Pterocarpus erinaceus	38	12.2	-	+	-
Prosopis africana	38	12.2	_	+	-
Ficus sycomorus	25	8.0	-	+	-
Xamenia americana	18	5.8	-	+	-
Annona senegalensis	36	11.5	-	+	-
Vitex doniana	36	11.5	-	-	+
Total	**312**	**100**			

+ means Consumed – means Not Consumed

This observation agreed with the report of Altmann (1998) who stated that young plants and leaves are good source of protein and minerals, and have low fibre, tannin and toxin levels. It was observed that fruits were the plant part mostly consumed during wet season while seed and fruit was consumed in the same manner during dry season. This may be connected to the fact that fruit contain high sugar and high carbohydrate level (Kuns and Linemair, 2007) while seeds provide a good source of protein and fatty acids (Heller *et al*., 2002).

During dry season, *Detarium microcarpun*, *Piliostigma thonningii*, *Ficus sycomorus*, *Prosopis africana*, *Annona senegalensis*, constitute the major diet of the animal while *Andropogan gayanus Strychnos spinosa*, *Nuclear latifolia*, *Vitelaria paradoxa* are consumed during wet season. The difference in plant species consumed during the dry and wet seasons by the animal are probably due to their abundance or distribution. According to Garba (1987), nutritional content, abundance, distribution, and seasonal availability of resources consumed by these primates have a major impact on their feeding patterns.

Table 3: Proximate composition of plant species consumed during wet season

Plants species	%DM	%CF	%CP	%EE	%ASH
Andropogon gayanus	10.82	29.13	8.75	10.36	5.99
Strychnos spinosa	64.27	2.3	5.67	17.52	0.50
Nuclear latifiora	32.27	15.14	10.33	7.33	5.66
Vitelaria paradoxa	7.49	10.43	11.73	14.92	2.30
Ficus sycomorus	12.29	31.54	8.85	3.56	2.66
Annona senegalensis	13.02	4.22	10.16	10.06	3.39
Tamarindus indica	17.52	4.7	18.37	18.58	10.91

Table 4: Proximate composition of plant species consumed during dry season

Plants species	%DM	%CF	%CP	%EE	%ASH
Detarium macrocarpum	13.41	2.90	12.02	13.29	5.04
Parkia biglobosa	12.77	11.02	26.23	18.67	4.20
Piliostigma thonningii	12.70	4.3	14.03	12.19	3.98
Prosopis africana	13.16	0.81	15.46	8.17	3.04
Pterocarpus erinaceus	15.22	4.7	18.37	18.58	10.91
S. sycomorus	12.24	31.54	8.85	3.56	2.66
Xamenia americana	6.32	2.67	8.75	13.66	18.20
Annona senegalensis	13.02	4.22	10.16	10.66	3.39
Vitex doniana	7.49	10.43	11.73	14.92	2.30

The proximate composition of plant species are presented on Tables 3 and 4 above. The results of the proximate analysis show that the selected plant species by these animals were relatively higher in nutrient content although with little variation due to seasonal changes. This supported the view of Odun (1980) that seasonal variation affects crude protein contents of tropic plants. Consumption pattern was in line with the report of Barton and Whiten (1993) where it was stated that chemical and nutrient content influenced feeding consumption in female Olive baboon. It was evident that the higher the nutritive components of plant, the more its consumption. We concluded that seasonal variation affects the feeding pattern of Olive baboon and that the identified plants should to be conserved in ex-situ for sustainable captive management of Olive baboons.

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