



Biotic Pressure Due to Choice of Plant Species for Domestic Livestock in Sariska Tiger Reserve

KEYWORDS

Biodiversity, Sariska tiger reserve, grazing. Domesticated livestock, biotic pressure, choice of species.

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ABSTRACT *The Sariska tiger reserve in Aravallis has its own importance and specific characteristics endowed with unique biodiversity. In the present study an attempt has been made to ascertain the current status of the choice of plants species for the domesticated livestock with their different parts in the all possible study area. Attention is focused on one of the important reserve forest of state of Rajasthan with pace of their endemism and facing number of challenges in this reserve. In present study emphasize on biotic pressure occurred inside and outside of reserve due to grazing with choice of plants species by domesticated livestock which are prevailing inside and outside periphery of the reserve. Several studies so far in this field of domesticated livestock grazing in different reserve areas like Mathur 1991, Rogers 1990, 1991, Panwar 1985, Studsrod and Wegge 1995, Singh et al. 1995, Katewa, 1996, Grau and Brown 2000, Silori, 2001 emphasize the impact on biodiversity and crisis on natural reserves which are gift of nature and having aesthetic importance.*

Introduction: Rajasthan, the largest state in our country, has marked difference in physiographic feature. According to the Champion and Seth (1968) the forest of Aravalli region fall under the broad category of Tropical Dry forests. Study area the "Sariska Tiger reserve" (74°14' to 76° 34' N and 25° 5' to 27° 3' E) is situated in the Aravalli hill range and lies in the semi-arid part of Rajasthan (Rodgers and Panwar, 1988). It became a wild life sanctuary in 1955 and Tiger reserve in 1982. According to Department of Forest, Government of Rajasthan the total area of the Sariska Tiger Reserve is 866 sq.km, of which 302.2 sq. km. is buffer zone and 497.8 sq.km is core zone. Sariska core zone is comprised of three isolated; pockets: Core-I (273.8 sq.km), II (126.5 sq.km.) and III (97.5 sq.km). The status of the Core I has been notified as a National park in 1982. Sariska is undulating to hilly and has numerous narrow valleys. Kiraska and Kankwari plateau and two large lakes Mansarovar and Somsagar. Silisad lake is situated just along the north eastern boundary of the reserve. The altitude of Sariska varies from 540 to 777 meters. Earlier Sariska was the private hunting grounds of Alwar's royal family, today only 20 percent of this vast expanse of jungle is "Tiger Habitat". The vegetation of Sariska correspond to Northern tropical dry deciduous forests (sub group 5 B; 5/E 1 and 5/E2) and Northern tropical thorn forest (Sub Group 6 B) (Champion and Seth, 1968). The forest being scattered and sparse over a large area on various geological and soil formation and vary greatly in composition. *Anogeissus pendula* (Dhok) is dominant species in the undulating area and on the hills. *Boswellia serrata* (Salar) and *Lannea coromandelica* (Garjan) grows on steep rocky areas. *Acacia catechu* (Khair), *Zizyphus mauritiana* (Bordi) and *Butea monosperma* (Dhak) are found in valleys. *Dendrocalamus strictus* is extremely limited in distribution and is found along the well drained reaches of the streams and moist and colder part of the hills.

Material and methods: Personal observations were taken in the field by visiting the study area and its different landforms. It was a great help that the field staff of Sariska Tiger Reserve, Department of Forest, Government of Rajasthan was associated always in the field. Plant samples

(leaf, flower etc.) were brought to Indira Gandhi Centre for Human Ecology, Environmental and Population Studies, herbarium sheets for important species were prepared and help and cooperation was sought from the "Herbarium" of Department of Botany, University of Rajasthan, Jaipur for finding out the status of vegetation in the study area. Extensive field studies with help of quadrates, density, abundance have been estimated, simultaneously interviewing based on questionnaire also followed. Choice of valuable species was determined by interviewing local people in villages, gwadas (grazing camps) and the study under a microscope of leftover material in jaws of domesticated livestock inside and outside the reserve.

Result and Discussion: During the field visit it was observed that the livestock graze upon tress, herbs, and shrubs with their respective choices due to choosy nature of different livestock inside and outside the reserve. The biotic pressure occur due migration of domestic livestock in deep forest by broken the rubble wall for demarcation of reserve. Only certain selected plant species with their different part faces problem of grazing and resultantly their number reduces, determined by quadrate studies. Table (a) shows and list has been prepared according to the choice of grazing of different species by reared livestock like buffaloes, Cattles and goats. The observation related to grazing indicates that 18 tree species, 21 herb species, 9 shrubs species 7 stragglers species, 19 grass species might face the problem of thinning in their frequency of occurrence in the given study area. If controlled on grazing neglected, these species may be enlisted as endangered species by competent authority and organization.

Table (a) Choice of plant species for different domestic livestock (cattle, buffalo and goat) in Sariska Tiger Reserve

S. No.	Name of plants species	Part used by livestock for grazing or browsing
Trees		
1.	<i>Balanities aegyptica</i>	Leaves
2.	<i>Boswellia serrata</i>	Leaves
3.	<i>Commiphora wightii</i>	Leaves

4.	<i>Zizyphus mauritiana</i>	Leaves, Fruits
5.	<i>Butea monosperma</i>	Leaves
6.	<i>Bauhinia racemosa</i>	Leaves
7.	<i>Acacia catechu</i>	Leaves
8.	<i>Acacia leucophloea</i>	Leaves, Fruits
9.	<i>Acacia senegal</i>	Leaves, Fruits
10.	<i>Dicrostachys cinerea</i>	Leaves
11.	<i>Anogeissus latifolia</i>	Leaves
12.	<i>Anogeissus pendula</i>	Leaves
13.	<i>Zizyphus cumini</i>	Leaves
14.	<i>Mitragyna parvifolia</i>	Leaves
15.	<i>Ehretia laevis</i>	Leaves
16.	<i>Ficus glomerata</i>	Leaves
17.	<i>Ficus religiosa</i>	Leaves
18.	<i>Phoenix sylvestris</i>	Leaves, Fruits

16.	<i>Sorghum halepense</i>	Leaves
17.	<i>Sporobolus coromandelianus</i>	Leaves
18.	<i>Tetrapogon tenellus</i>	Leaves
19.	<i>Themeda quadrivalis</i>	Leaves

Table(b). Area with intensive grazing by domesticated livestock in Sariska Tiger Reserve

Live stock grazing <i>In situ</i>	Kirashka	Intensive grazing occurs around surrounding area of protected areas. Degraded barren land occurs.
	Kankwari	
	Umri	
	Haripura	
	Deori	
	Serawas	
Live stock grazing <i>In situ</i>	Bandipul	Situated in and adjacent to the buffer zone of Sariska Tiger Reserve represent degraded forest due to grazing of livestock
	Rundh	
	Dulawa	
	Bhagani	
	Alquwal	
	Madhogarh	
	Kushalgarh	
	Bani Talvriksh	
	Todi Nirjan	
	Kirawas	
Live stock grazing <i>In situ</i>	Jodhawas	Situated in and adjacent to the buffer zone of Sariska Tiger Reserve represent degraded forest due to grazing of livestock
	Kala Chhara	
	Indok	
	Raika	

S. No.	Name of plant species	Part used by live-stocks for grazing and browsing
Shrubs		
1.	<i>Capparis sepiaria</i>	Leaves
2.	<i>Flacourtia indica</i>	Leaves
3.	<i>Grewia flavescens</i>	Leaves
4.	<i>Grewia ovalifolia</i>	Leaves
5.	<i>Limonia acidissima</i>	Leaves
6.	<i>Zizyphus nummularia</i>	Leaves, Fruits
7.	<i>Rhus mysorensis</i>	Leaves
8.	<i>Justica adatoda</i>	Leaves
9.	<i>Lantana aculeata</i>	Leaves
Creeper/Stragglers		
1.	<i>Cocculus hirsutus</i>	Leaves
2.	<i>Alysicarpus monilifer</i>	Leaves
3.	<i>Luffa acutangula</i>	Leaves
4.	<i>Ichnocarpus frutescens</i>	Leaves
5.	<i>Leptadenia pyrotechnica</i>	Leaves
6.	<i>Ipomoea pestigridis</i>	Leaves
7.	<i>Rivea hypocrateriformis</i>	Leaves
Herbs		
1.	<i>Cleome viscosa</i>	Fruits
2.	<i>Abutilon indicum</i>	Leaves
3.	<i>Sida acuta</i>	Leaves
4.	<i>Sida cordifolia</i>	Leaves
5.	<i>Sida rhombifolia</i>	Leaves
6.	<i>Corchorus aestuans</i>	Leaves
7.	<i>Corchorus olitorius</i>	Leaves
8.	<i>Corchorus trilocularis</i>	Leaves
9.	<i>Tephrosia purpurea</i>	Leaves
10.	<i>Cassia tora</i>	Leaves and Fruits
11.	<i>Ageratum conyzoides</i>	Leaves
12.	<i>Tridax procumbens</i>	Leaves
13.	<i>Veronia cinerea</i>	Leaves
14.	<i>Physalis minima</i>	Leaves
15.	<i>Peristrophe bicalyculata</i>	Leaves
16.	<i>Boerhavia diffusa</i>	Leaves
17.	<i>Achyranthes aspera</i>	Leaves
18.	<i>Achyranthes bidenta</i>	Leaves
19.	<i>Acalypha ciliata</i>	Leaves
20.	<i>Euphorbia hirta</i>	Leaves
21.	<i>Cyrotis cristata</i>	Leaves
Grasses		
1.	<i>Allotropis cimiciana</i>	Leaves
2.	<i>Aphluda mutica</i>	Leaves
3.	<i>Aristida adscensionis</i>	Leaves
4.	<i>Brachiaria distachya</i>	Leaves
5.	<i>Cenchrus setigerus</i>	Leaves
6.	<i>Chloris dolichostachya</i>	Leaves
7.	<i>Chloris barbata</i>	Leaves
8.	<i>Cyandon dactylon</i>	Leaves
9.	<i>Dactyloctenium aegyptium</i>	Leaves
10.	<i>Dendrocalamus strictus</i>	Leaves
11.	<i>Dichanthium annulatum</i>	Leaves
12.	<i>Digitaria abludeus</i>	Leaves
13.	<i>Eragrotis ciliaris</i>	Leaves
14.	<i>Heteropogon contortus</i>	Leaves
15.	<i>Seteria verticillata</i>	Leaves

Conclusion: In this study emphasis was laid on the study of floral diversity in Sariska Tiger Reserve, during January, 2001 to March, 2004. This study revealed that biodiversity of the study area was affected due to anthropogenic activities. It provides an assessment of the key human factors and their relative roles in driving the destruction of biodiversity, which are likely to operate, not only in core zone but immediately surrounding buffer zone. Grazing is reported to be an activity which has potential to damage biodiversity. The existence of livestock is directly associated with human population may lead into biotic pressure on reserve. In this study during the field visits it was observed that intensive grazing is done at several places in the Sariska Tiger Reserve. If the condition prevails number of livestock will be more than the carrying capacity of the reserve, and biodiversity is affected in irreversible manner.

Acknowledgement: Author has deep sense of gratitude to his supervisor Director Indira Gandhi centre for Human Ecology and Population studies, University of Rajasthan, Jaipur for their able guidance during the research tenure and also thankful to Dept of forest, Government of Rajasthan and field director to Sariska and other staff members.

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