

MICRO-HISTOLOGICAL STUDIES ON THE FOOD HABITS OF SAMBAR, GAUR AND CATTLE IN PERIYAR TIGER RESERVE IN WINTER

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Introduction

Very little studies have been done on the food habits of sympatric ungulates in India. Some preliminary studies were done by Shcaller (1967) on the food plant of wild ungulates in Kanha, Berwic (1976) in Gir and Johnsingh and Sankar (1991) in Mundanthurai. Green (1985) has studied the food habits of ungulates in Kedarnath Musk Deer Sanctuary by faecal analysis.

During the months of November and December 1992 and January 1993 we studied the food plants of Sambar, Gaur and Cattle in Periyar Tiger Reserve, Kerala. The objectives of this study were : (a) To identify the plant species eaten by Sambar, Gaur and Cattle in Periyar Tiger Reserve; (b) To know the proportion of grasses, herbs, shrubs and tree leaves in the diet of Sambar, Gaur and Cattle; and (c) To find out the dietary overlap if any among these ungulates.

Study Area

Study was conducted in the tourist zone (about 36 km) of Periyar Tiger Reserve. The biotope of the area is of moist deciduous type.

Methods

Epidermal characteristics of all possible food plants including grasses, herbs and shrubs were studied by methods adopted by Hansen (1971), Todd and Hansen (1973) and Hansen and Reid (1975) by taking section of upper and lower epidermis of leaves. Sections were mounted on microslides and camera lucida drawings are made. A key was thus prepared for all possible food plants of the reserve. In the second step the faecal matter of Sambar, Gaur and Cattle were collected from the field, brought to the laboratory washed well and preserved in 5% formaline. The leaf fragments in these samples were compared with the key prepared for identification. The results were compared with field observations to confirm our findings of faecal matter analysis.

Results and Discussions

Food plants of Sambar : Sambar in total took 31 plant species, of which 22 were grasses, 3 species of shrubs and 5 herbs. *Emblica officinalis*, is the species where fruits were eaten (Table 1).

The study showed that of the total

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2. Wildlife Preservation Officer
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plant species, 70.9% were grasses and 29.1% non-grasses. *Garnotia arundinacea* and *Panicum repens* seem to be the most preferred food plant of Sambar.

Table 1

List of plants eaten by Sambar

Grasses

1. *Pennisetum hohenackeri*
2. *Garnotia arundinacea**
3. *Setaria intermedia*
4. *Dinebra retroflexa*
5. *Eragrostis bifaria*
6. *Cyrtococcum oxyphyllum*
7. *Cynodon dactylon*
8. *Apocopis wightii*
9. *Oplismenus compositus*
10. *Heteropogon contortus*
11. *Manisuris granularis*
12. *Cymbopogon contortus*
13. *Paspalum copactum*
14. *Digitaria sanguinalis*
15. *Panicum repens**
16. *Oryza granulata*
17. *Chrysopogon orientalis*
18. *Saccharum spontaneum*
19. *Themeda triandra*
20. *Rottboellia exaltata*
21. *Eleusine indica*
22. *Paspalum conjugatum*

Herbs

1. *Urena sinuata*
2. *Hibiscus lobatus*
3. *Ageratum conyzoides*
4. *Flemingia strobilifera*
5. *Urena lobata*

Shrubs

1. *Helicteres isora*
2. *Solanum torvum*
3. *Maesa perrottetiana*

Trees

Emblica officinalis

* Food plants mostly eaten during the period.

Food plants of Gaur : Gaur used 23 species of plants. Among these 21 were grasses, one herb and one shrub (Table 2).

Here the percentage of grasses over other plants was far exceeding when compared to Sambar. Ninetyone per cent of the recorded plant species were grasses and the rest herbs and shrubs. The major species eaten by Gaur are *Garnotia arundinacea*, *Setaria intermedia* and *Apocopis wightii*.

Table 2

List of Plants Eaten by Gaur

Grasses

1. *Setaria intermedia*
2. *Pennisetum hohenackeri*
3. *Heteropogon contortus*
4. *Chrysopogon orientalis*
5. *Oplismenus compositus*
6. *Saccharum spontaneum*
7. *Themeda triandra*
8. *Rottboellia exaltata*
9. *Imperata cylindrica*
10. *Garnotia arundinacea*
11. *Eleusine indica*
12. *Panicum repens*
13. *Panicum javanicum*
14. *Manisuris granularis*
15. *Eragrostis bifaria*
16. *Dinebra retroflexa*
17. *Panicum trypheron*
18. *Cymbopogon confertiflorus*
19. *Apocopis wightii*
20. *Digitaria sanguinalis*
21. *Cynodon dactylon*

Herbs

Flemingia strobilifera

Shrubs

Helicteres isora

* Food plants mostly eaten during this period.

Food plants of Cattle : Twenty three food plants were identified for domestic cattle.

Of these, 19 were grasses, 2 herbs and 2 shrubs. The list of food plants of cattle is given in Table 3. *Garnotia arundinacea*, *Panicum repens* and *Paspalum compactum* are the species mostly consumed by cattle.

Table 3

List of plants eaten by domestic Cattle

Grasses

1. *Cynodon dactylon*
2. *Cyrtococcum muricatum*
3. *Eleusine indica*
4. *Oplismenus compositus*
5. *Panicum repens*
6. *Paspalum conjugatum*
7. *Dinebra retroflexa*
8. *Garnotia arundinacea*
9. *Imperata cylindrica*
10. *Manisuris granularis*
11. *Paspalum compactum*
12. *Pennisetum hohenackeri*
13. *Rottboellia exaltata*
14. *Setaria intermedia*
15. *Themeda triandra*
16. *Alloteropsis cimicina*
17. *Apluda aristata*
18. *Digitaria sanguinalis*
19. *Oplismenus burmannii*

Herbs

1. *Sida longifolia*
2. *Urena sinuata*

Shrubs

1. *Helicteres isora*
2. *Solanum torvum*

* Food plants eaten during this period.

The results of this study show mostly grasses is the food of Sambar, Gaur and Cattle. The lesser number of non-grasses

may be due to the fact, that the grass fragments took more time for digestion than non-grasses because of the presence of silica content. The differential rate of digestion of different plants was reported by Dearden *et al.* (1975) also.

Analysis of gross dietary profile suggests dietary overlap among the three animals namely Sambar, Gaur and Cattle in Periyar. There is 35.2% overlap between Sambar and Gaur, 31.5% between Sambar and Cattle and 30.4% in the case of Gaur and Cattle (Table 4). *Garnotia arundinacea* seem to be the most preferred food of Sambar, Gaur, and Cattle in Periyar during winter months.

Table 4

Types of plants in the diet of Sambar, Gaur and Cattle

Classes of plants	Classes of plants in (%)		
	Sambar	Gaur	Cattle
Grass	70.9	91.4	82.6
Herb	16.2	4.3	8.7
Shrub	9.6	4.3	8.7
Tree	3.3	0	0

Conclusions

The study, though of a short term duration, reveals that in the diet of Sambar, Gaur and Cattle grasses dominated over browse. There is considerable overlap of food plants among the three animals, and too much grazing by domestic cattle may lead to food scarcity in the study area. But clearcut conclusions can be made only after carrying out a long term study, at least for two more years.

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SUMMARY

The studies on the food plants of Sambar, Gaur and Cattle conducted in the Periyar Tiger Reserve, Thekkady, Kerala have been described in this paper.

पेरियर बाघ आरक्षित क्षेत्र में सदियों से सांभर, गौर और गाय बैलों की भोजन की आदतों का औतिकीय अध्ययन
के०के० श्रीवास्तव, ए०के० भारद्वाज, सोनी जार्ज व वी०जे० जकरियास

सारांश

पेरियर बाघ आरक्षित क्षेत्र, ठेक्काडी, केरल के सांभर, गौर और गाय-बैलों की भोजन आदतों पर किये गये अध्ययन को प्रस्तुत अभिपत्र में वर्णित किया गया है ।

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