

Chapter 6

Fodder grasses of spotted deer of Chandaka-Dampara Wildlife Sanctuary, Odisha, India

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Abstract: The Chandaka-Dampara Wildlife Sanctuary, located in Khordha district of Odisha, supports a rich diversity of flora and fauna, including the spotted deer (*Axis axis*). Present study aimed to document the diversity and seasonal use of fodder grasses by spotted deer from January to November 2025. Field surveys across grasslands, forest edges and scrublands recorded 40 grass species from the family Poaceae, categorized by palatability as high, medium and low. Highly palatable species, including *Cynodon dactylon*, *Chloris barbata*, *Digitaria ciliaris* and *Urochloa mutica*, formed the primary diet. Seasonal changes influenced grazing patterns, with open grasslands favoured during the monsoon and shaded, moist patches used in summer. Present findings highlighted the importance of maintaining diverse grassland and forest-edge habitats for supporting spotted deer populations and illuminated the need for effective habitat management to ensure forage availability and ecosystem stability.

Keywords: Ecosystem stability, forest-edge habitat, palatability, scrublands

Introduction

The Chandaka-Dampara Wildlife Sanctuary is a prominent protected forest area located about 20 kilometres northwest of Bhubaneswar, the capital city of Odisha (Satapathy et al., 2025a). The sanctuary is known for its rich biodiversity and scenic natural landscapes. Six major forest types are represented in the sanctuary, which include moist bamboo brakes, lateritic semi-evergreen forests, peninsular Sal forests, secondary moist mixed deciduous forest and tropical dry evergreen forests (Behera et al., 2025). It serves as an important green buffer for the rapidly growing urban areas around it and plays a vital role in ecological balance and wildlife conservation (Satapathy et al., 2025b). The sanctuary is home to a variety of flora and fauna, including elephants, deer and numerous species of birds and reptiles. With its dense forests, rolling hills and tranquil environment,

Chandaka-Dampara Wildlife Sanctuary is not only a haven for wildlife but also a popular destination for nature lovers, researchers and eco-tourists (Behera et al., 2025). Chandaka-Dampara Wildlife Sanctuary provides an ecologically significant habitat for the spotted deer, supporting its feeding, shelter and breeding requirements through a diverse range of vegetation (Behera et al., 2025). The sanctuary's mosaic of dry deciduous forest, scrub and grassland patches creates favourable conditions for the sustenance of spotted deer populations, particularly through the availability of seasonal fodder grasses (Pattnayak et al., 2018). Spotted deer utilize open grasslands for grazing and forested areas for cover, reflecting a close association between habitat structure and species behaviour (Rastogi et al., 2021). The presence of perennial and seasonal grasses within the sanctuary plays a vital role in maintaining herd stability and spatial distribution of spotted deer throughout the year (Rastogi et al., 2021). As one of the primary herbivores of Chandaka-Dampara, spotted deer also contribute to ecosystem processes such as nutrient cycling and vegetation dynamics, emphasizing their ecological importance and the need for focused habitat management within the sanctuary (Behera et al., 2025). The present study aims to document the diversity of fodder grasses utilized by spotted deer in Chandaka-Dampara Wildlife Sanctuary, examine seasonal feeding patterns and highlight key conservation concerns. The findings are intended to support informed habitat management and contribute to the long-term conservation of spotted deer and grassland ecosystems within the sanctuary.

Methodology

The field surveys were conducted in Chandaka-Dampara Wildlife Sanctuary from January 2025 to November 2025 to document fodder grasses consumed by spotted deer (*Axis axis*). Surveys covered major habitat types, including grasslands, scrub and dry deciduous forests, using line transects and direct field observations (Figure 1). Seasonal visits were undertaken during the winter, summer and monsoon periods to record variations in grass availability and use. Grass species were identified using standard floras and palatability was assessed based on direct grazing observations, feeding signs and field evidence such as cropped shoots. The collected data were analyzed to determine the diversity and seasonal importance of fodder grasses (Sinha et al., 2023; Das et al., 2024; Behera et al., 2025).

Results and discussion

The field investigations conducted between January 2025 to November 2025 recorded a total of 40 species of fodder grasses belonging to the family Poaceae that were utilized by spotted deer in Chandaka-Dampara Wildlife

Sanctuary (Table 1; Figure 2). These species occurred across grasslands, forest clearings, scrub patches, wetland margins and bamboo-dominated areas, reflecting the habitat heterogeneity of the sanctuary. Based on field observations and feeding signs, the recorded grasses were categorized into high (H), medium (M) and low (L) palatability classes (Figure 3). A majority of the species exhibited high palatability, indicating their significant contribution to the diet of spotted deer. Highly preferred grasses such as *Cynodon dactylon*, *Chloris barbata*, *Digitaria ciliaris*, *Urochloa mutica*, *Imperata cylindrica*, *Oryza rufipogon* and *Panicum repens* were frequently observed in grazing sites and showed clear signs of repeated utilization. These grasses were particularly abundant during the monsoon and post-monsoon seasons, supporting increased grazing activity and herd aggregation in open grassland areas. Bamboo species such as *Bambusa bambos* and *Dendrocalamus strictus* were also consumed, especially during lean periods, highlighting their supplementary role in the diet. Seasonal variation in fodder availability influenced grazing patterns and habitat use by spotted deer. During the monsoon season, the abundance of fresh and succulent grasses resulted in extensive use of open grasslands and forest edges. During summer months, deer were more frequently observed near moist areas, wetlands and shaded forest patches where perennial grasses such as *Hymenachne amplexicaulis*, *Leersia hexandra* and *Isachne globosa* persisted. Low-palatability species such as *Saccharum spontaneum*, *Aristida setacea* and *Setaria* spp. were rarely grazed and were mostly utilized only under conditions of limited forage availability. The dominance of highly palatable grasses suggests that Chandaka-Dampara Wildlife Sanctuary currently supports a suitable forage base for sustaining spotted deer populations. However, signs of grazing pressure were evident in certain grassland patches, particularly near water sources and frequently used trails. As a key herbivore, spotted deer play an important role in shaping grassland structure, influencing plant regeneration and contributing to nutrient cycling. Their selective grazing behaviour helps maintain grass diversity but may also lead to localized overuse if habitat management is inadequate. The current study emphasized the ecological importance of grassland and grass-forest ecotone habitats within the sanctuary. Conservation efforts should be focused on maintaining grassland diversity, preventing habitat degradation and ensuring seasonal availability of key fodder species. Sustainable grassland management will not only support spotted deer populations but also benefit other herbivores and enhance overall ecosystem stability in Chandaka-Dampara Wildlife Sanctuary (Table 1).

Table 1: List of fodder grasses of Chandaka-Dampara Wildlife Sanctuary

Botanical name	Common name	Local name	Palatability
<i>Alloteropsis cimicina</i> (L.) Stapf	Summer grass	Bada borati ghasa	L
<i>Apluda mutica</i> L.	Mauritian grass	Mugar ghasa	H
<i>Aristida setacea</i> Retz.	Broom grass	Jhadu ghasa	L
<i>Axonopus compressus</i> (Sw.) Beauv. (Plate 1a) P.	Tropical carpet grass	Kachuri ghasa	M
<i>Bambusa bambos</i> (L.) Voss	Giant thorny bamboo	Kanta baunsa	H
<i>Bothriochloa bladhii</i> (Retz.) S.T. Blake	Australian Bluegrass	Gandhabena	H
<i>Bothriochloa pertusa</i> (L.) A. Camus	Pitted beard grass	Basana	H
<i>Chloris barbata</i> Sw.	Swollen finger grass	Gajalakha	H
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Love grass	Guguchia	H
<i>Coix lacryma-jobi</i> L. (Plate 1b)	Job's tears	Gargada	H
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Duba ghasa	H
<i>Cyrtococcum trigonum</i> (Retz.) A. Camus	Zigzag grass	Chhunchunia ghasa	M
<i>Dactyloctenium aegyptium</i> (L.) Willd. (Plate 1c)	Crowfoot	Kukudia	H
<i>Dendrocalamus strictus</i> (Roxb.) Nees	Solid bamboo	Salia baunsa	H
<i>Digitaria ciliaris</i> (Retz.) Koeler	Southern crabgrass	Chiri-chiri ghasa	H
<i>Dinebra chinensis</i> (L.) P.M. Peterson & N. Snow	Chinese sprangletop	Bhuru	M

<i>Eleusine indica</i> (L.) Gaertn. (Plate 1h)	Indian goosegrass	Nandia	H
<i>Eragrostis ciliaris</i> (L.) R.Br.	Gophertail lovegrass	Gajalakha	M
<i>Eragrostis unioides</i> (Retz.) Nees ex Steud. (Plate 1f)	Chinese lovegrass	Phurphuri ghasa	H
<i>Hackelochloa granularis</i> (L.) Kuntze (Plate 1d)	Pitscale grass	Tinpali	H
<i>Heteropogon contortus</i> (L.) P. Beauv. ex Roem. & Schult. (Plate 1i)	Black speargrass	Sinkula	H
<i>Hymenachne amplexicaulis</i> (Rudge) Nees	Dal grass	Jala ghasa	M
<i>Imperata cylindrica</i> (L.) Raeusch. (Plate 1e)	Cogon grass	Chhana ghasa	H
<i>Isachne globosa</i> (Thunb.) Kuntze	Swamp millet	Dhana ghasa	M
<i>Leersia hexandra</i> Sw.	Swamp rice grass	Jala dhana	M
<i>Oplismenus burmanni</i> (Retz.) P. Beauv.	Burmann's basket grass	Kaugodia ghasa	H
<i>Oryza rufipogon</i> Griff.	Wild rice	Balunga	H
<i>Panicum repens</i> L.	Creeping panic grass	Panidal	H
<i>Panicum sumatrense</i> Roth	Little millet	Suan	M
<i>Paspalum scrobiculatum</i> L. (Plate 1g)	Kodo millet	Kodua	M
<i>Polytrias indica</i> (Houtt.) Veldkamp	Java grass	Kachranga ghasa	M
<i>Saccharum spontaneum</i> L.	Kans grass	Kasatandi	L
<i>Sacciolepis indica</i> (L.) Chase	Indian cupscale grass	Nilendri ghasa	L
<i>Setaria flavida</i> (Retz.) Veldkamp	Yellow watercrown grass	Bileilanji ghasa	L
<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Yellow foxtail	Siala languda	L
<i>Setaria verticillata</i> (L.) P. Beauv.	Bristly foxtail	Baunsa ghasa	L
<i>Sporobolus diandrus</i> (Retz.) P. Beauv.	Smut grass	Kakarchada	H
<i>Urochloa distachyos</i> (L.) T.Q. Nguyen	Tropical signal grass	Dhanri ghasa	M

<i>Urochloa mutica</i> (Forssk.) T.Q. Nguyen	Para grass	Para ghasa	H
<i>Urochloa panicoides</i> P.Beauv.	Liverseed grass	Jalganti	H

(L: Low; M: Moderate and H: High)

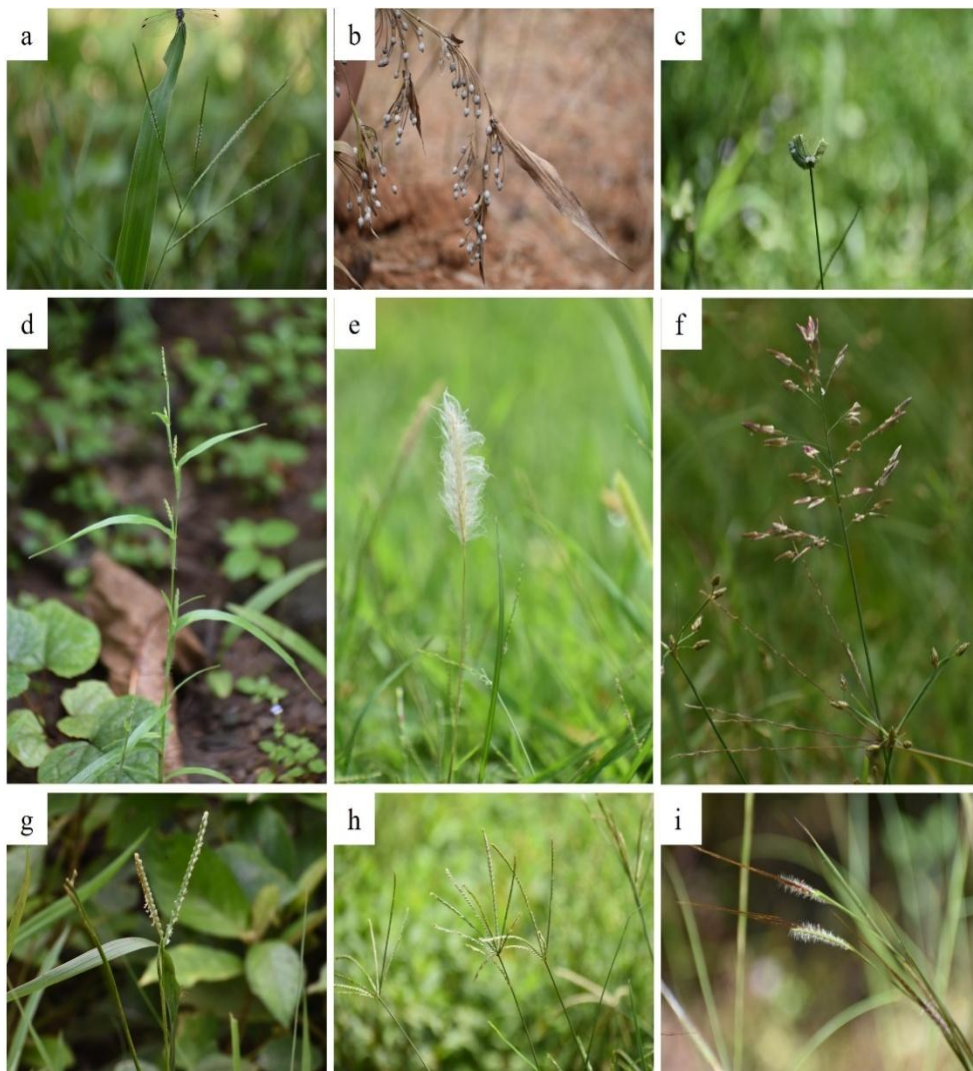


Plate 1: Palatable fodder grasses: (a) *Axonopus compressus*, (b) *Coix lacryma-jobi*, (c) *Dactyloctenium aegyptium*, (d) *Hackelochloa granularis*, (e) *Imperata cylindrica*, (f) *Eragrostis unioides*, (g) *Paspalum scrobiculatum*, (h) *Eleusine indica* and (i) *Heteropogon contortus*



Figure 1: Observation of fodder grasses in the grazing area of spotted deer



Figure 2: Spotted deer in the study area during grazing

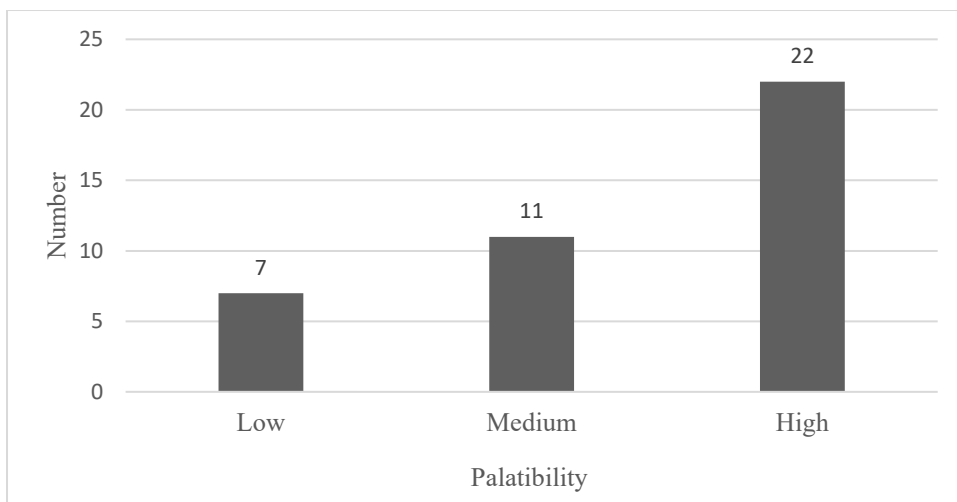


Figure 3: Palatability range of fodder grasses in the study area

Conclusion

The present study documented 40 fodder grass species consumed by spotted deer in Chandaka-Dampara Wildlife Sanctuary, with several highly palatable species forming the core of their diet. Seasonal variations influenced grazing patterns, highlighting the importance of diverse grassland and forest-edge habitats. Effective management of these habitats is essential to sustain deer populations and maintain ecosystem balance within the sanctuary.

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