



RESEARCH COMMUNICATION

Trees of Yadahalli Chinkara Wildlife Sanctuary, Bagalkot, Karnataka, India: A checklist

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ABSTRACT

Yadahalli Chinkara Wildlife Sanctuary is located in semi-arid zone of north Karnataka with heterogeneous vegetation types within it. The forest has variable geographical features such as rocky slopes, open grass lands, scrub forest, seasonal minor waterfalls and lakes. The present paper provides a checklist of tree species of Yadahalli Chinkara Wildlife Sanctuary, Bagalkot, which spreads over the Bilagi and Mudhol taluka. The list comprises of 80 tree species belonging to 67 genera of 34 families. The family Fabaceae contributes 23 species followed by Moraceae, Rubiaceae and Rutaceae 4 species each. Out of 80 species, three species are endemic to Peninsular India, four species are Vulnerable (VU), and one species is Near Threatened (NT) at global level. The present work is an inventory of tree species of Yadahalli Chinkara Wildlife Sanctuary, Bagalkot, in view to create awareness among the local people and to support the conservation activities in the forest.

Introduction

The people and trees have interdependent relationship since ancient time. This strong affinity between man and trees were graphically demonstrated by the Chipko movement. This movement was one of the forest conservation movements, which began in 1973 in Uttarakhand, then the other parts of India (1). Trees are not only major components of the forest and the vital part of our terrestrial ecosystem, rather they also provide shelter to lower groups of organisms as well as wildlife, act as environment protector, reduce the pollutants and provide a number of useful things such as timber, fuel, fodder, food, medicine, charcoal, gum, resins, rubber, pulp for paper etc. for human beings in day to day life (2).

The study area comes under a dry scrub area and remains dry throughout the year. As a consequence, the area shows high plant diversity with many species adapted to this arid ecosystem. Similar studies have been encountered in the district such as, 84 tree species belonging to 68 genera of 35 families were reported from Badami range forest (3) and 48 tree species of legumes were reported for the Bagalkot district (4). Subsequently, in adjacent districts for instance, Gadag, Bellary and Vijayapur (Previously Bijapur), 118 tree species belonging to 45 families

were documented from Kappat hills, Gadag (5). It was reported that 133 tree species belonging to 105 genera and 42 families from Gadag district as well (6). Whereas, Daroji Sloth Bear Sanctuary sheltered with 87 species belonging to 66 genera of 20 families (7). A total of 48 tree species were documented (8) in and around of Karnataka State Women's University, Jnanashakti, Torvi Campus, Bijapur. Records are on 56 tree species for Vijayapur tehsil, Karnataka (9).

The forest of Yadahalli Chinkara Wildlife Sanctuary area shelters interesting fauna that includes various insects, reptiles, mammals and many birds. It is also blessed with rich flora that supports the socio-economic status of both Bilagi and Mudhol region. The tree species serve as major source of timber and other non-timber yielding forest products (NTFP) for local people (10). But the increasing anthropogenic activity like grazing livestock has great impact on the diversity of species in the forest (11). Due to a lack of awareness amongst local people over exploitation of forest resources mainly shrubs and trees have resulted in habitat destruction and therefore tree species has become more vulnerable than other plant species (12). The distribution of wildlife with respect to trees in the forest has not been inventoried completely so far. Therefore, the present data provides the tree species exist in the Yadahalli Chinkara Wildlife Sanctuary Bagalkot. The checklist will provide a base line data

for flora writing, conservation measure for important forest covers of the study area.

Materials and Methods

Study area

Yadahalli Chinkara Wildlife Sanctuary is located in northern Karnataka between 16°18'00" - 16°23'47" N latitude and 75°24'00"-75°37'43"E longitude. The sanctuary is stretched between Bilagi and Mudhol ranges of Bagalkot Territorial Forest Division with 96.3691 sq km of reserve forest area (13). The temperature ranges between 14 °C in December-January and 38 °C in April-May and average annual rainfall is 580 mm. There are numerous nalas (water channels) draining into either Krishna or Ghataprabha rivers (14). The topographical features are marked by chain of hills roughly running from west to east. As a whole the vegetation is typically deciduous type and scrub jungle in most of the places (15).

Data collection

An extensive floristic survey was conducted during January 2017-December 2020 in different seasons. The collected specimens were identified taxonomically with the aid of literatures (16-20). Herbarium specimens were prepared followed by standard procedure (21) and deposited in the herbarium of Department of Botany, Karnataka Science College, Dharwad, Karnataka, India. The nomenclature of plant species was updated using IPNI (22), Plants of the world online (23) and The Plant List (24). The taxonomic status of all plant species were verified with the available sources (25, 26). The checklist of tree species is arranged alphabetically and it is followed by the APG IV system of classification (27) with their botanical name, family, vegetation, local names, flowering and fruiting season and status. Some of the species are provided in Fig. 1-3.

Results and Discussion

The present survey reveals that there are 80 tree species belonging to 67 genera of 34 families presented in Supplementary Table 1. Out of this diversity, the family Fabaceae is dominant (23 species from 18 genera) followed by Moraceae (4 species from 1 genera), Rubiaceae (4 species from 4 genera), Rutaceae (4 species from 4 genera), Apocynaceae (3 species from 3 genera), Bignoniaceae (3 species from 2 genera), Myrtaceae (3 species from 3 genera). Five families are represented with 2 species from 2 genera, they are Anacardiaceae, Annonaceae, Arecaceae, Malvaceae and Olacaceae, followed by four families which are represented with 2 species from 1 genus; the families are Combretaceae, Ebenaceae, Phyllanthaceae and Rhamnaceae. Eighteen families are represented by one species from one genus; they are Bixaceae, Boraginaceae, Burseraceae, Capparaceae, Casuarinaceae, Cornaceae, Flacourtiaceae, Lamiaceae, Loganiaceae, Magnoliaceae, Meliaceae, Moringaceae, Muntingiaceae, Santalaceae, Sapotaceae, Simaroubaceae, Ulmaceae and Zygophyllaceae (Fig. 4). The dominance of Fabaceae is due to its adaptability to the various ecological and geographical

conditions. They are factories of nitrogen fixation being equipped with root nodules (28).

All these 80 species are assessed for IUCN category, 1 species fall near the Near Threatened (NT) category and 4 species in to the Vulnerable (VU) category. The species of *Aegle marmelos* (L.) Correa., recorded as Near Threatened (NT) and *Chloroxylon swietenia* DC., *Dalbergia latifolia* Roxb., *Santalum album* L. and *Senegalia ferruginea* (DC.) Pedley, as Vulnerable (VU) at global level (26). Along with this, *Mangifera indica* L. recorded as Data Deficient (DD), 35 species are in Not Evaluated (NE) category and 37 species belong to Least Concern (LC) category (Supplementary Table 1). However, three species are listed as Endemic plants to the Peninsular India; they are *Boswellia serrata* Roxb., *Dichrostachys cinerea* (L.) Wight & Arn. and *Dolichandrone atrovirens* (Heyne ex Roth) Sprague (25). Photographs of some of the species are given (Fig. 1-3).

Field observations indicated that the species of *Chloroxylon swietenia* DC., *Dalbergia latifolia* Roxb., *Dichrostachys cinerea* (L.) Wight & Arn., *Senegalia ferruginea* (DC.) Pedley and *Dolichandrone atrovirens* (Heyne ex Roth) Sprague have potential source of timber and firewood, hence the species are largely exploited by the local people and become vulnerable in the regional level. Similarly, The species of *Aegle marmelos* (L.) Correa., is usually planted near temples in the margins of the sanctuary and it is routinely worshiped by the devotees, therefore there is no possible threats at the regional level.

Some of the tree species are the source of food and shelter for Indian Gazelle or chinkara (*Gazella bennettii*). As they feed on young shoot, leaves and fruits or pods from many shrubs and small trees, they were found more in the higher basal area, and further, they choose small, open areas within good forest cover (13). The chinkara used to consume large number of pods and fruits as dietary food (29). The present checklist is represented with the species of *Prosopis*, *Ziziphus* and *Balanites* which are the main dietary requirement for gazelle.

Conclusion

The study area contains many plant families represented by single genus and species and few Vulnerable, Near Threatened and Endemic species which require special attention and conservation measures to protect their gene pool in the sanctuary area. Hence, it is highly recommended that, the awareness programme through social involvement will help to maintain vegetation cover and habitat pattern for wild animals.

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Fig. 1. A. *Albizia amara* (Roxb.) Boivin; B. *Cassia fistula* L.; C. *Catunaregam spinosa* (Thunb.) Tirveng.; D. *Chloroxylon swietenia* DC.; E. *Cochlospermum religiosum* (L.) Alston; F. *Crateva religiosa* Forst.f.



Fig. 2. A. *Dalbergia lanceolaria* L.f.; B. *Dichrostachys cinerea* (L.) Wight & Arn.; C. *Diospyros melanoxylon* Roxb.; D. *Dolichandrone atrovirens* (Heyne ex Roth) Sprague; E. *Flacourtia indica* (Burm.f.) Merr.; F. *Ixora pavetta* Andrews.



Fig. 3. A. *Senegalia chundra* (Roxb. ex Rottler) Maslin; B. *Strychnos potatorum* L.f.; C. *Terminalia anogeissiana* Gere & Boatwr.; D. *Wrightia tinctoria* subsp. *rothii* (G. Don) Ngan; E. *Ximenesia americana* L.; F. *Ziziphus xylopyrus* (Retz.) Willd.

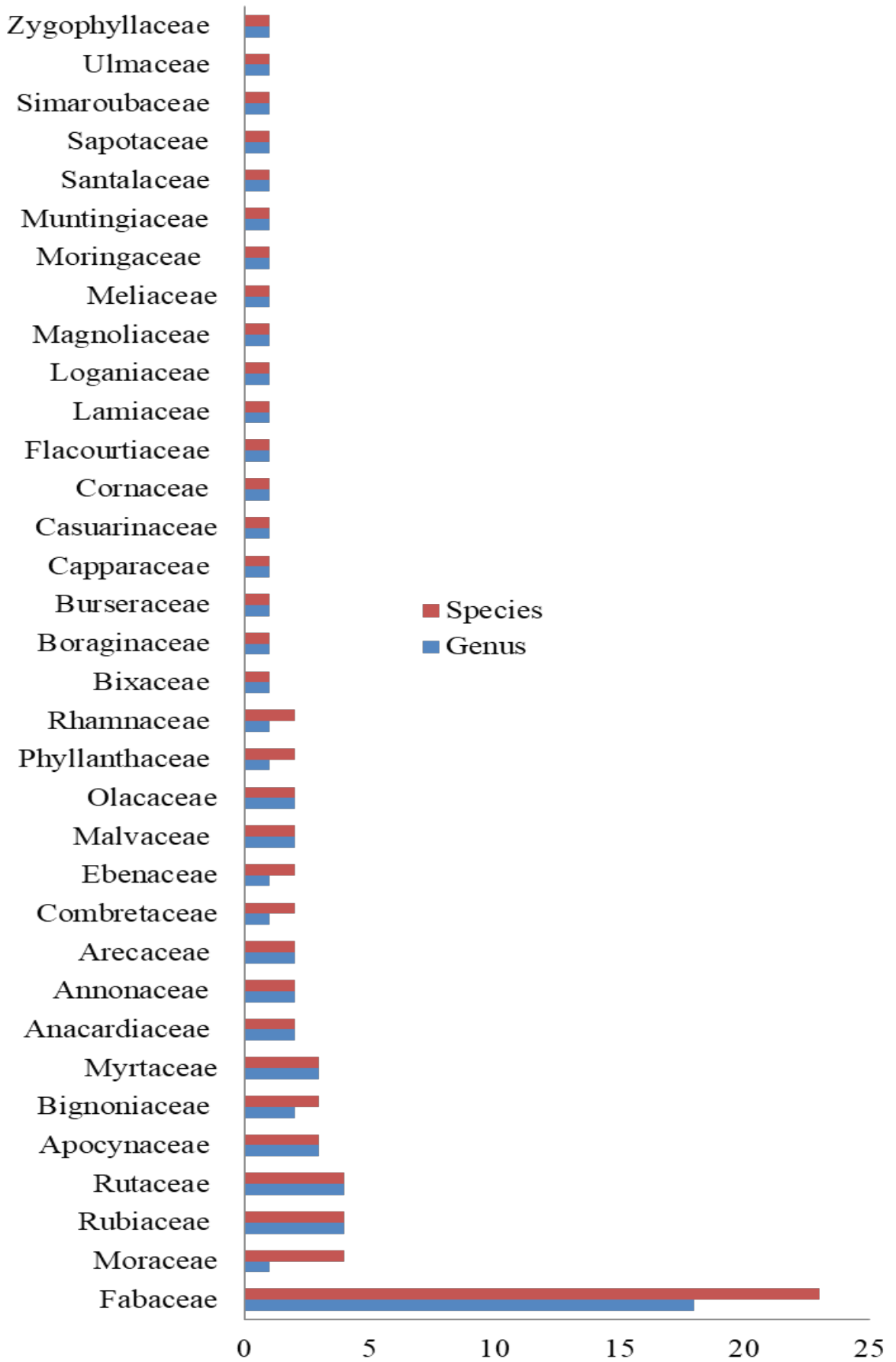


Fig. 4. Distribution of Tree species with genera of Yadahalli Chinkara Wildlife Sanctuary, Bagalkot.

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Authors' contributions

MK - Field exploration, collection, herbarium preparation, identification, herbarium consultation and photography. KK - Field exploration, collection, identification, laboratory analysis, nomenclatural updates and photography.

Conflict of interests

The authors declare no competing interests.

Supplementary files

Table 1. Checklist of tree species of Yadahalli Chinkara Wildlife Sanctuary, Bagalkot.

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Additional information

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