

FLORA OF CHITRAKOOT IN THE VALMIKI RAMAYANA: A MODERN ECOLOGICAL AUTHENTICATION

JYOTI YADAV¹, §

Abstract. The manuscript presents a comprehensive phytogeographic analysis of the plant species of Chitrakoot region mentioned in *Valmiki Ramayana* (*Ayodhya Kanda*), integrating textual archaeology, botanical identification, mapping, and modern ecological authentication. 45 plants taxa belonging to 28 families were listed from cantos of *Ramayana*, with vernacular (Sanskrit/Hindi) names cross-referenced against contemporary botanical nomenclature. Each species was then authenticated against peer-reviewed phytosociological field surveys, Botanical Survey of India (BSI) records, and ethnobotanical studies conducted in the Chitrakoot region. Five distinct vegetation zones are mapped and described. The result shows a remarkable degree of ecological continuity, out of 45 listed species 43 have been confirmed present in the modern Chitrakoot landscape. The spatial distribution of these taxa aligns precisely with *Valmiki's* description, corroborating that the *Ramayana* encodes accurate, empirically verifiable phytogeographic knowledge. This paper argues that the text constitutes a significant palaeoecological and landscape-historical record, and that its systematic botanical reading offers novel insights for historical ecology, conservation biogeography, and literary geography in South Asia.

Keywords: Indian Knowledge System, Indian Ancient Text, *Ramayana*, Chitrakoot, Ecology, Flora.

¹ Post Doctoral Fellow, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi 110067, India. e-mail: 07yadavjyoti@gmail.com

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1. Introduction

In the frontier of geographical inquiry, the ancient literary text and landscape ecology is often studied yet underexplored in various dimensions. The Sanskrit epic *Ramayana* and *Mahabharata* are very famous in between Indian audience (Richamn, 1994) and has been studied for their historical, ethical, theological & literary content. However, their rich description about landscapes, ecology, seasonal cycles and other natural phenomena still unexplored under the lens of scientific geography. At the junction of Indo-Gangetic plain and northern Vindhyan range Chitrakoot occupies a different place. The word Chitrakoot means 'hill of many wonders' and in *Ramayana* it is explained as Maha Van and the places serves as primary dwelling of the exile of *Rama* with *Sita* and *Lakshmana*. The *Ramayana* written in seven *kandas* and in *Ayodhya Kanda* the detailed description of landscape, river, flora and fauna of Chitrakoot mentioned as the exiled royal family moved Ayodhya southward to Chitrakoot via crossing the Ganga River and hermitage of sage Bhardwaj.

2. Study Area

Chitrakoot, a district situated on the border of Uttar Pradesh and Madhya Pradesh. The region lies between 24°48' to 25°12' N 80°58' to 81°34' E. In the north it is bordered by Kaushambi, Prayagraj in the east, Satna and Rewa (M.P) in the south and Banda to the west. Taking its physiography into account, the landscape is a part of Bundelkhand Plateau which forms the northern expression of the Vindhyan range. The maximum elevation of this region is approximately 350-500 mt. while valley floors ranges between 200-220 mt. The area is drained by river Mandakini and its tributaries. The region having subtropical climate characterized by 900-1100 mm annual rainfall with mild winters and extreme summers. As per 2011 census of India the population of a region is 23,316 with average literacy of 70.01%.

3. Objective

To identify and compile all plant species discussed in Chitrakoot section of *Valmiki Ramayana* and to authenticate the presence of each species with modern studies conducted in the Chitrakoot region regarding its location and distribution.

4. Methodology

4.1. Textual Source and Verses Identification. The verses which describe the Chitrakoot region having detailed description of floras are taken from the epic. The primary source

for the present study is *Valmiki Ramayana*, Geeta press, Gorakhpur, Sanskrit edition, supplemented by the scholarly translation and annotation by Desiraju Hanumanta Rao and K.M.K. Murthy. Cross-referencing of Sanskrit plant names against Monier-Williams Sanskrit Dictionary (1899), Kirtikar and Basu's Indian Medicinal Plants (1975).

4.2. Botanical Authentication Methodology. Published phytosociological surveys and ethnobotanical studies were consulted. District level flora data from Botanical survey of India (BSI) for Uttar Pradesh and Madhya Pradesh, Ecological literature of central Indian forest, Champion and Seth (1998) forest type classification for the Vindhyan zone and research paper publication has been cited to authenticate the botanical data.

4.3. Mapping Framework. The flora vegetation zone map spatially delineates the five ecologically coherent vegetation zones identified, overlaid on the Chitrakoot microregion, with each zone coded by dominant *Ramayana*-documented species. By using Google earth pro the data has been extracted and mapped.

5. Result and Discussion

5.1. Botanical Inventory: Flora of Chitrakoot in *Ayodhya Kanda*. The diverse ecological zones that define the Chitrakoot landscape and *Valmiki's* extensive ecological knowledge as a forest-dwelling poet-sage are reflected in the taxonomic diversity, which is impressive for a limited geographic area and includes riparian species, sacred trees, medicinal plants, aromatic species, and cultivated food plants. Table 1 below shows the entire botanical collection.

Table 1. Complete Botanical Inventory of Flora Documented in Chitrakoot section of the *Valmiki Ramayana (Ayodhya Kanda)*

Family	Plant Species	Sanskrit/Hindi Name & <i>Ramayana</i> Sarga Ref.	Botanical Name	Growth Form	Modern Ecological Authentication
Moraceae	Banyan	Bargad [2-55-8, 2-55-9, 2-91-30]	<i>Ficus benghalensis</i>	Tree	Confirmed-widespread in Chitrakoot forests & ghats (BSI,2007)
	Jackfruit	Kathal [2-94-8]	<i>Artocarpus heterophyllus</i>		Confirmed- cultivated & wild in Vindhyan deciduous forests (Maurya et al.,2016)
	Sacred Fig	Peepal [2-84-9, 2-91-49]	<i>Ficus religiosa</i>		Confirmed- temple groves & forest margins throughout the region (Champion & Seth,1968)
Rhamnaceae	Indian Jujube	Ber [2-80-3, 2-94-9]]	<i>Ziziphus mauritiana</i>	Shurb/tree	Confirmed- documented in ethnobotanical surveys, Chitrakoot (Prajapati et al.,2015)

Poaceae	Bamboo	Baansh [2-80-3, 2-84-9, 2-94-8]	<i>Bambusa vulgaris</i>	Grass	Confirmed- riparian & forest zone of Mandakini valley (Amirthalingam & Sudhakar, 2013)
	Rice	Chawal [2-94-8]	<i>Oryza sativa</i>	Cereal	Confirmed- (Amirthalingam & Sudhakar, 2013)
	Halfa grass	Kush [2-94-9, 2-103-29]	<i>Desmostachya bipinnata</i>	Grass	Confirmed- sacred grass, riverbanks of Mandakini (Amirthalingam & Sudhakar, 2013)
Myrtaceae	Indian blackberry	Jamun [2-55-14, 2-91-51, 2-94-8, 2-94-9]	<i>Syzygium cumini</i>	Tree	Confirmed- (Pandey & Shukla, 2003)
Fabaceae	Parrot tree	Palash [2-56-6]	<i>Butea monosperma</i>	Tree	Confirmed- (Maurya et al., 2024)
	Indian Rosewood	Shinshipa/Shisham [2-84-3]	<i>Dalbergia Sisso</i>	Tree	Confirmed- (Amirthalingam & Sudhakar, 2013)
	Pulses	Daal [2-91-68]	<i>Lens culinaris</i>	Herb	Confirmed-cultivated around Chitrakoot settlements (Amirthalingam & Shudhkar, 2013)
	Sandan/Tinish	Tinish [2-91-68]	<i>Ougeinia dalbergioides</i>	Tree	Confirmed-Vindhyan Forest surveys (Champion & Seth, 1968)
	True Indigo	Shanwan/Indrauj [2-91-68]	<i>Indigofera tinctoria</i>	Shrub	Confirmed- (BSI, 2007)
Rutaceae	Golden Apple	Bael [2-56-7, 2-91-30, 2-94-8, 2-94-9]	<i>Aegle marmelos</i>	Tree	Confirmed- (Singh, 2019)
	Wood Apple	Kaith [2-91-49, 2-91-30]	<i>Limonia acidissima</i>		Confirmed- (Amirthalingam & Shudhkar, 2013)
Anacardiaceae	Marking nut	Bhil/Bhilva [2-56-7]	<i>Semecarpus anacardium</i>	Tree	Confirmed-Vindhyan & Satpura ranges (BSI, 2007)
	Mango	Aam/Amra [2-91-30, 2-91-51, 2-94-8, 2-94-9]	<i>Mangifera indica</i>		Confirmed- cultivated & wild throughout Chitrakoot region (Amirthalingam & Sudhakar, 2013)
	Almondette tree	Priyal [2-94-8, 2-94-9]	<i>Buchanania lanzan</i>		Confirmed-Vindhyan forests; ethnobotanical survey, Satna dist. MP (Champion & Seth, 1968)
Dipterocarpaceae	Indian Dammer	Saal [2-71-16, 2-71-17]	<i>Shorea robusta</i>	Tree	Confirmed- dominant species of Chitrakoot Forest (Pandey & Shukla, 2003)
	Indian Gurjan	Ashwakarna [2-99-19, 2-99-19]	<i>Dipterocarpus turbinatus</i>		NA
Santalaceae	Sandalwood	Chandan [2-71-8, 2-76-18, 2-88-6, 2-91-58]	<i>Santalum album</i>	Tree	Confirmed- (Subasinghe, S., 2013).
Thymelaeaceae	Agar wood	Aguru/ Agar [2-71-8, 2-88-6]	<i>Aquilaria spp.</i>	Tree	NA
Burseraceae	Indian bdellium	Guggul [2-76-18]	<i>Commiphora wightii</i>	Shurb	Confirmed- semi arid margins of Bundelkhand- Vindhyan region (BSI, 2007)
Combretaceae	Beleric Myrobalan	Bahed/Bibhitaki [2-91-49]	<i>Terminalia bellirica</i>	Tree	Confirmed- (Majumdar et al., 2012)

	Indian Laurel	Asan [2-94-9]	<i>Terminalia elliptica</i>		Confirmed- (Pandey & Shukla, 2003)
	Axle wood tree	Dhav [2-94-9]	<i>Anogeissus latifolia</i>		Confirmed- dry deciduous forests of Vindhyan range (BSI,2007)
Arecaceae	Toddy palm /Palmyra Palm	Taal [2-91-50]	<i>Borassus flabellifer</i>	Palm	Confirmed-Bundelkhand plateau & Vindhyan foothills, (BSI,2007)
	Bent	Bent [2-94-8]	<i>Calamus rotang</i>	Climber	Confirmed- (BSI,2007)
Rubiaceae	Bur-flower tree	Kadamba [2-84-9,2-94-8]	<i>Neolamarckia cadamba</i>	Tree	Confirmed-most areas, Mandakini River banks & sacred groves (Amirthalingam & Sudhakar, 2013)
Pedaliaceae	Sesame	Tilak [2-91-50, 2-94-8, 2-94-9]	<i>Sesamum indicum</i>	Herb	Confirmed- (Amirthalingam & Sudhakar, 2013)
Nelumbonaceae	Night Lotus	Tamal [2-91-50]	<i>Nelumbo nucifera</i>	Aquatic Herb	Confirmed- ponds & water bodies of Chitrakoot region, (Amirthalingam & Sudhakar, 2013)
Phyllanthaceae	Indian Gooseberry	Amlki/Amla [2-91-30, 2-91-51, 2-94-8, 2-84-9]	<i>Phyllanthus emblica</i>	Tree	Confirmed-Vindhyan Forest, (Prajapati et. al, 2015)
Oleaceae	Jasmine	Malti [2-91-51]	<i>Jasminum sambac</i>	Shrub	Confirmed- (Amirthalingam & Sudhakar, 2013)
Apiaceae	Carom Seed	Ajwain [2-91-67]	<i>Trachyspermum ammi</i>	Herb	Confirmed- (Upadhyay & Sikka, 2022)
Pandanaceae	Fragrant screw-pine	Kewda flower [2-94-6]	<i>Pandanus odorifer</i>	Shrub	Confirmed- Jagdev (2020)
Symplocaceae	Symplocos tree	Lodh [2-94-8,2-94-9]	<i>Symplocos racemosa</i>	Tree	Confirmed- Amirthalingam & Sudhakar (2013)
Dilleniaceae	Sandpaper tree	Bhavya [2-94-8,2-94-9]	<i>Dillenia indica</i>	Tree	Confirmed- Amirthalingam & Sudhakar (2013)
Ebenaceae	Gaub tree	Tinduk [2-94-8]	<i>Diospyros malabarica</i>	Tree	Confirmed- (BSI,2007)
Lamiaceae	Beechwood	Kashmiri [2-94-8]	<i>Gmelina arborea</i>	Tree	Confirmed- (BSI,2007)
Meliaceae	Indian lilac	Neem [2-94-8]	<i>Azadirachta indica</i>	Tree	Confirmed-universal in Chitrakoot forests and settlements (Amirthalingam & Sudhakar, 2013)
Capparaceae	Lengam tree	Varan [2-94-8]	<i>Crataeva Nurval</i>	Tree	Confirmed-riverine habitats; Mandakini banks, (Amirthalingam & Sudhakar, 2013)
Sapotaceae	Indian Butter Tree	Mahuwa [2-94-8]	<i>Madhuca longifolia</i>	Tree	Confirmed-dominant in dry deciduous forests of Bundelkhand (BSI, 2007)
Lythraceae	Pomegranate	Bijak/ Anaar [2-94-9]	<i>Punica granatum</i>	Shrub/Tree	Confirmed-Hanni (2025)
Simaroubaceae	Desert Date/Hingot	Ingudi [2-102-20, 2-104-13]	<i>Balanites aegyptiaca</i>	Tree	Confirmed - semi-arid and dry zones, Bundelkhand margins (BSI,2007)

Musaceae	Banana	Kadali [2-107-18]	<i>Musa paradisiaca</i>	Herb	Confirmed-cultivated and semi-wild throughout Chitrakoot area, (Amirthalingam & Sudhakar, 2013)
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5.2. Ecological Authentication. *Shorea Robusta* (Sal) stands out the most significant species among all flora document in the Chitrakoot part of the *Ramayana* most of the cantos mention it explicitly. The *Ramayana* describes that in Chitrakoot Forest the Sal tree has the dominant canopy and in the present-day ecology of the Vindhyan forest the description matches precisely. Sal is a tropical tree native to South Asia and its local distribution was regulated in the Vindhyan and Satpura range (Pandey & Shukla, 2003) because of favorable geological conditions & soil (Tiwari, 1995). The associated species complex described in the *Ramayana* is confirmed by the phytosociology of Sal forests in this zone. Studies from Tripura (Majumdar et al., 2012), Gorakhpur (Pandey & Shukla, 2003) consistently show *Terminalia Billerica* as a co-dominant in Sal Forest. The astonishing level of ecological constancy across over two millennia is compelling proof of the empirical botanical basis of the *Ramayana*.

5.3. Sacred Tree Triad: *Ficus Benghalensis*, *Ficus Religiosa*, and *Aegle Marmelos*. The co-occurrence of Sacred Fig (*Ficus religiosa*), Banyan (*Ficus benghalensis*), and Bael (*Aegle marmelos*) in the *Ramayana*'s Chitrakoot passages illustrates how deeply ecological knowledge and religious practice were integrated in ancient Indian culture. These three species make up what ethnobotanists refer to as a "species complex" species that are purposefully preserved and safeguarded near temples, hermitages, and pilgrimage destinations throughout the Indian subcontinent. The Kamadgiri sacred grove in modern-day Chitrakoot, which has been referred to as a living forest by both pilgrims and ecologists, continues to support populations of all three species, making it one of India's oldest continually recorded sacred grove systems.

5.4. Medicinal & Aromatic Species: Ayurvedic Continuity. Many medicinal purposes and significant flora were documented in the Chitrakoot portion of *Valmiki Ramayana*. *Azadirachta Indica* (Neem: antibacterial), *Semecarpus Anacardium* (Bhilva: caustic resin used topically), *Phyllanthus Emblica* (Amla: Vitamin C-rich fruit; *Rasayana* in Ayurveda), *Commiphora Wightii* (Guggul: anti-inflammatory resin), *Aegle Marmelos* (Bael: digestive and anti-inflammatory), *Terminalia Bellirica* (Baheda: part of Triphala formulation), and *Symplocos Racemosa* (Lodh: astringent bark used in gynecological complaints). Many of these species are used and still grown in at the Arogya Dham Ayurvedic Centre, which

was founded in Chitrakoot under the Deendayal Research Institute. The uninterrupted ethnomedical legacy offers living proof of the botanical record found in the *Ramayana*. According to (Prajapati et al., 2015) the used of all the plants are actively seen in the forest areas of Satna district by tribal Vaidya (healers) of the Kol, Gond & Bhil people.

5.5. Species with Conservation Significance. Quite a few species mentioned in *Ramayana* now facing conservation threats that were not anticipated in antiquity. In the Red list of IUCN Sandalwood (*Santalum album*) listed as vulnerable because of over use for the aromatic and timber purposes. Similarly, due to a good source of perfumery material Agarwood (*Aquilaria spp.*) fall in critically endangered. Thirdly, Guggul (*Commiphora wightii*) threatened in India due to over-harvesting of its resin. The *Ramayana*'s documentation of these species growing abundantly in the Chitrakoot forests serves as a palaeoecological baseline a pre-anthropogenic reference point for what the regional flora once included. This finding has direct implications for conservation biogeography, the re-establishment of these species in the Chitrakoot sacred grove system would constitute both an ecologically and culturally meaningful restoration programme.

5.6. Vegetation Zone Analysis Mapping. A critical analytical contribution of this study is the spatial organization of the *Ramayana*-documented flora into five ecologically and geographically coherent vegetation zones. This zonation is derived from the convergence of three data sources: (i) the ecological context clues embedded in the *Ramayana* verses themselves including descriptions of proximity to the river, hill slopes, hermitage clearings, and cultivated fields (ii) modern phytosociological classifications of the Chitrakoot landscape and (iii) the physiographic zonation of the region.

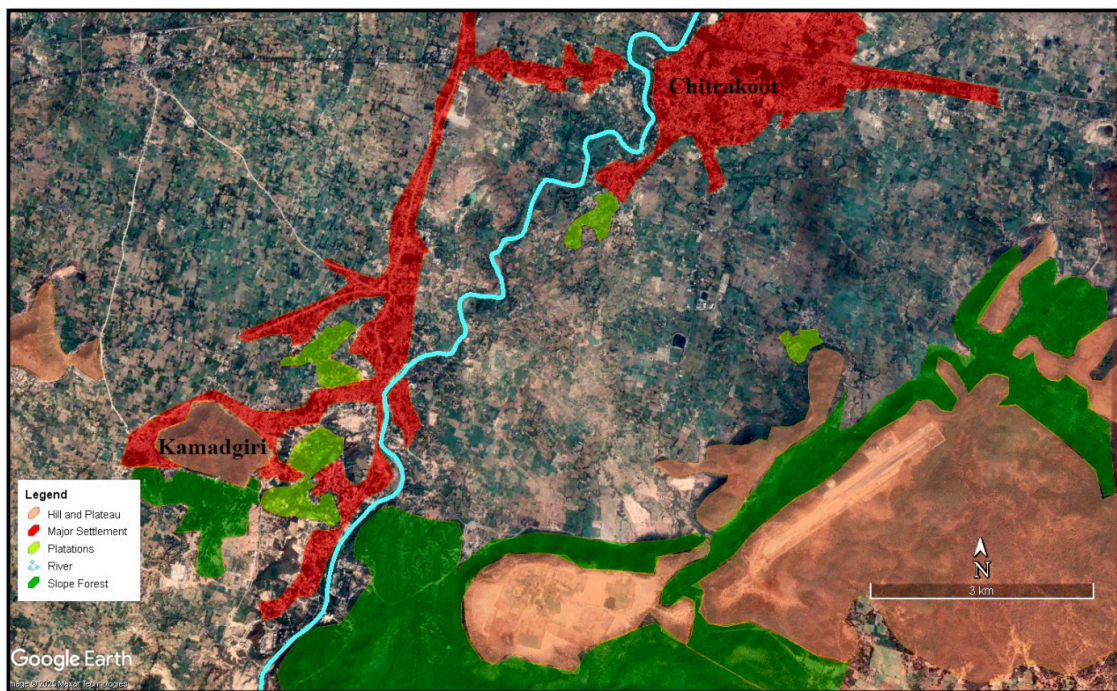
6. Discussion

6.1. The Valmiki Ramayana as a Phytogeographic Document. The result of the study states that the flora mentioned in the *Valmiki Ramayana* constitutes a phytogeographic record flora of ancient India. Out of the 45 flora listed from the *Ramayana* 43 are present in the Chitrakoot region. Two species namely *Aquilaria spp.* and *Dipterocarpus turbinatus* are not directly confirmed by any ecologist or botanist because both the plants are ecologically restricted to humid evergreen forests (Wang, Y. et al., 2021). Except these two all the species listed in *Ramayana* fit in the Northern Tropical dry/ moist deciduous forest and its related riparian, holy grove and agro-forest assemblages.

The *Valmiki Ramayana* written in a poetic form but the description of flora and its accuracy is not merely a coincident. Differentiating between the Sal & Ashwakarna, Baheda &

Table 2. Vegetation Zone Classification of Chitrakoot Flora from the *Valmiki Ramayana*

Vegetation Zone	Physical Characteristics	Key Flora Species
Zone 1: Riparian/Aquatic (Mandakini River Banks)	Moist, alluvial, 200-250m ASL	<i>Bambusa vulgaris</i> , <i>Neolamarckia cadamba</i> , <i>Dalbergia sissoo</i> , <i>Nelumbo nucifera</i> , <i>Desmostachya bipinnata</i> , <i>Crataeva nurala</i>
Zone 2: Sal Tropical Moist Deciduous Forest (Kamadgiri Hill Slopes)	Moderate moisture, sandy-loam, 250-350m	<i>Shorea robusta</i> (dominant), <i>Terminalia bel-lirica</i> , <i>Terminalia elliptica</i> , <i>Anogeissus lati-folia</i> , <i>Madhuca longifolia</i> , <i>Ougeinia dalber-gioides</i>
Zone 3: Dry Deciduous Forest (Vindhyan Plateau)	Dry, rocky, laterite soil, 300-500m	<i>Butea monosperma</i> , <i>Buchanania lanzan</i> , <i>Borassus flabellifer</i> , <i>Diospyros malabarica</i> , <i>Ziziphus mauritiana</i> , <i>Balanites aegyptiaca</i>
Zone 4: Sacred Grove/Settlement fringe (hermitages and Village margins)	Disturbed, Semi-cultivated, 220-280m	<i>Ficus benghalensis</i> , <i>Ficus religiosa</i> , <i>Aegle marmelos</i> , <i>Azadirachta indica</i> , <i>Syzygium cumini</i> , <i>Phyllanthus emblica</i> , <i>Santalum al-bum</i>
Zone 5: Cultivated/ Agro-forest (Hermitage Gardens)	Managed, alluvial plains	<i>Oryza sativa</i> , <i>Sesamum indicum</i> , <i>Lens culi-naris</i> , <i>Musa paradisiaca</i> , <i>Mangifera indica</i> , <i>Artocarpus heterophyllus</i> , <i>Punica granatum</i>

Figure 1. Showing Different Vegetation Zone of Chitrakoot Flora from the *Valmiki Ramayana*

Asan, and Bambusa & Rattan cane can only be done by person who has keen interest and knowledge about the particular landscape and plants. *Valmiki*, a forest dwelling sage provides a first-hand knowledge of central India with his precise botanical description. He

provides the clarifying points of contention, mentioning and highlighting the distribution and location of the floras and deliver information from his period.

6.2. Ecological Continuity and Landscape Change. Despite more than two millennia of intervening history, the high degree of botanical correspondence between the current Chitrakoot landscape and the *Ramayana's* Chitrakoot illustrates the ecological resilience of the Vindhyan forest system and the conservation role of the region's sacred character. Due to religious prohibition, the Kamadgiri pilgrimage complex, which attracts millions of worshippers each year to complete the 5-kilometer parikrama (circumambulatory trek) around the holy hill, has served as an unintentional ecological reserve, preventing degradation of the hill's forest cover. The same sacred story that records the forest's biodiversity in the first millennium BCE has helped to preserve that biodiversity until the twenty-first century CE, making this an amazing example of religion-mediated conservation.

However, there have been notable changes to the terrain that call for conservation and documentation. According to academics from A.P.S. University, Rewa, the Mandakini River, who's pristine, fish-rich, lotus-adorned waters *Valmiki* describes with poetic perfection, is currently experiencing significant water quality degradation due to urban and pilgrimage-related garbage dumping. Concrete bank construction for fishing and pilgrimage infrastructure has partially jeopardized the riparian forest corridor of the Mandakini, which in the *Ramayana* nourishes Kadamba, Shisham, Kush grass, and Lotus. A scientifically supported narrative of ecological degradation that might guide conservation planning is revealed by contrasting the ecological description found in the *Ramayana* with current landscape assessments.

6.3. Implications for Historical Geography & Literary Ecology. The present study helps in interdisciplinary works. For historical geography, the ancient text provides significant and precise information about phytogeographic and landscape data, supplementing the fragmentary material record of the pre-colonial period. For drawing ecological verifiable information from literary text, it offers a methodological framework and helps in ecocriticism. This framework can apply to other epics and ancient literature throughout south and south east Asia. It established a paleoecology baseline for the Chitrakoot region of the species before any disturbance, which can provide a protection to culturally and biologically significant areas and guide restoration of ecology and helps in conservation biogeography.

The Chitrakoot region's forest management can benefit from five zone vegetation model put forth in this research. It gives UP and MP forest department a framework to identify

the zones who need the protection and restoration. The *Ficus-Aegle-Santalum* grove found around the Kamadgiri and the Anusuya-Atri ashram site represent a cultural and biological heritage which needs to be protected under the National Biodiversity Action Plan as sacred natural sites.

7. Conclusion

The paper exemplifies that the *Valmiki Ramayana's* Chitrakoot description was precise and detailed phytogeographic record of the northern Vindhyan forest landscape. All the listed 45 plants taxa, representing 28 families in which 30 tree species, 6 shrubs, 5 herbs, 2 climbers and 1 aquatic herb and 1 palm. The physiographic, edaphic and hydrological structure of the Chitrakoot landscape as it exists now exactly matches the spatial distribution of these taxa, which are mapped into five vegetation zone. By cross-referencing each taxon with BSI records, modern phytosociological survey and ethnobotanical studies of the Chitrakoot region it is very pellucid that the description written by *Valmiki* is 95.6% accurate and empirically grounded botanical knowledge of the Central Indian forest ecosystem. The findings highlight the importance of interdisciplinary techniques that integrates geography, ecology, botany and classical literature and support the larger academic endeavor of understanding ancient Indian literary texts as geo-ecological documents.

From analysis the recommendations of the study are that the Phytogeographic investigations based on the current paper should be carried out for other regions mention in the epic. Formal legal protection as a sacred natural place and a place of botanical-literary heritage should be granted to the Chitrakoot sacred grove system. In situ restoration of endangered species from the Chitrakoot region should be prioritized in the Kamadgiri sacred groves particularly *Santalum album*, *Aquilaria spp.*, and *Commiphora wightii* to create a living ecological monument that unites ancient knowledge with contemporary conservation science.

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