



Elements Of Indian Phytogeography Revealed From The Epic Mahabharata

Patil D.A.

Post-Graduate Department of Botany,

S.S.V.P.Sanstha's L.K.Dr.P.R.Ghogrey Science College, Dhule-424005 (M.S.), India.

(Former Professor & Principal)

Corresponding Author: Email: dapatil_10aug@yahoo.com

Abstract:

The epic Mahabharata is examined with a central focus on the elements of Indian phytogeography. It has remained still neglected in this realm of research on scientific ground. The present author revealed such elements e.g. mountains, rivers, ancient countries or kingdoms, forests (Vana), religious places (Tirthas) neighboring country and some specific geographical regions from the ancient territory of Indian subcontinent. All these geographical elements are replete with some or other plant species. A total of 76 plant species belonging to 66 genera and 40 families are distributed in the said geographical elements of India. Their detailed floristic analysis is presented in this communication. The epic Mahabharata is thus also a literary source of Indian phytogeography. Importantly, this account projects sage Vyasa's in-depth observations of Indian biodiversity in ancient period of India and also geography.

Keywords: Epic Mahabharata, Phytogeography, India.

Introduction:

The 'Mahabharata' is ancient Hindu epic or Mahakavya written in Sanskrit. It is authored by the great sage Vyasa. It contains 1,00,000 verses and divided into eighteen sections (Parvans). It said to be compiled in the 4th century BC. or even prior to it. The Pandavas underwent as period of exile for the twelve years and dwelt in the forest followed by a year of exile incognito. This is the period in which Pandavas have fair proximity with forests or plant-world. The author sage Vyasa have endeavoured to document the elements of plant-world in this lexicon. The floral elements are particularly mirrored in one of the section (Parvan) of Mahabharata viz., Aranyaka Parva. The epic has influenced Indian culture greatly. It is, therefore, being studied in various compartments of knowledge. Even the scientific world is not aloof from it (*cf.* Mandal, 2022a,b; Rajani Jairam, 2016; Singh, 2015; Raghavendra *et al.*, 2003; Khangai, 2020; Patil, 2021). The literary resume indicated that the epic Mahabharata has not received attention in the perspective of phytogeography. It is for this reason, the present author paid attention on this aspect of investigation, the results of which are being presented in this account.

Methodology:

For the sake of knowing phytogeographical elements of Indian landmass, the present author examined the literary sources as those of Sarkar (1995), Rajagopalchary (2008) and Dutta (2008). The ancient names of localities, mountains, rivers, kingdom and plant species documented from these are analysed. The data so obtained is interpreted pertinently. The Sanskrit common plant names in the epic Mahabharata are equated with the recent botanical (Latin binomial) names and also assigned to their respective family following Bentham and Hooker's system of plant classification (1862-1883).

Systematic Enumeration:

1.	<i>Terminalia bellirica</i> (Gaertn.) Roxb. (Combretaceae) Epic Name : Aksa Region : Bank of Saraswati river Verse : 3.174.23
2.	<i>Phyllanthus fraternus</i> Webster (Euphorbiaceae) Epic Name : Ajataka Region : Gandhamadana mountain Verse : 3.155.40
3.	<i>Terminalia cuneata</i> Roth (Combretaceae) [Syn.T.arjuna (Roxb.) Wight & Arn.] Epic Name : Arjuna Region : Dvaitvana, King Kusika Country Verse : 3.25.17; 13.5.4.4
4.	<i>Saraca asoca</i> (Roxb.) de Wilde (Caesalpiniaceae) Epic Name : Asoka Region : Gandhamadana mountain; Lanka Verse : 3.155.44; 3.264.41
5.	<i>Ficus religiosa</i> L. (Moraceae) Epic Name : Asvattha, Pippala Region : Gandhamadana mountain, Saraswati river, Lake Near Dvaitavana Verse : 3.155.42; 9.3.5.8, 3.296.43:
6.	<i>Phyllanthus emblica</i> L. (Euphorbiaceae) (Syn.Emblica officinalis Gaertn.) Epic Name : Amalaka Region : Gandhamadana mountain Verse : 3.155.42
7.	<i>Mangifera indica</i> L. (Anacardiaceae)

	<p>Epic Name : Amra, Sahakara</p> <p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.40; 3.155.60</p>
8.	<p><i>Spondias pinnata</i> (L.f.) Kurz (Anacardiaceae)</p> <p>Epic Name : Amrataka</p> <p>Region : Gandhamadana mountain, Saraswati River</p> <p>Verse : 3.155.40; 9.36.59</p>
9.	<p><i>Balanites aegyptiaca</i> (L.) Delile (Balanitaceae)</p> <p>Epic Name : Inguda</p> <p>Region : Gandhamodana mountain, Bank of Saraswati River</p> <p>Verse : 3.155.43; 3.174.23</p>
10.	<p><i>Ficus racemosa</i> L. (Moraceae)</p> <p>Epic Name : Udumbara</p> <p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.42</p>
11.	<p><i>Neolmarckial cadamba</i> (Roxb.) Bosser (Rubiaceae)</p> <p>[Syn. <i>Athocephalus cadamba</i> (Roxb.) Miq.]</p> <p>Epic Name : Kadamba (Roxb.) Miq.</p> <p>Region : Dvaitavana, Kamyaka forest</p> <p>Verse : 3.25.17; 3.249.1</p>
12.	<p><i>Musa paradisiaca</i> L. (Musaceae)</p> <p>Epic Name : Kadali, Moca</p> <p>Region : Gandhamadan mountain, Vana</p> <p>Verse : 3.146.42, 44; 3.146.63, 64; 3.155.41</p>
13.	<p><i>Limonia acidissima</i> L. (Rutaceae)</p> <p>Epic Name : Kapittha</p> <p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.42</p>
14.	<p><i>Nelumbo nucifera</i> Gaertn. (Nelumbonaceae)</p> <p>Epic Name : Kamala, Tamarasa, Nalina, Padma, Puskara, Pundarika, Padmasaugandhika</p> <p>Region : Lake of Gandhamadana mountain; Pumpa lake; Vaiduryasikhara mountain, Sasayana Tirtha, Kailasa mountain, Malayavant mountain, Kailasa mountain lake, Pindaraka Tirtha.</p> <p>Verse : 3.155.49; 3.264.1; 3.155.51; 3.87.5; 3.155.33; 3.80.83-84; 3.151.5-6; 3.155.49; 3.80.120; 3.151.3</p>
15.	<p><i>Nerium indicum</i> Mill. (Apocynaceae)</p>

	<p>Epic Name : Karavira Region : Gandhamadana mountain; Dvaita vana Verse : 3.155.43; 3.296.43</p>
16.	<p><i>Capparis decidua</i> (Forsk.) EEdgew. (Capparidaceae) Epic Name : Karira Region : Bank of Saraswati, Kuru Jungal Country Verse : 3.174.23; 8.3.0.24</p>
17.	<p><i>Pterospermum acerifolium</i> Willd. (Sterculiaceae) Epic Name : Karnikara Region : Dvaitavana, Gandhamadana mountain Verse : 3.25.17; 3.155.45</p>
18.	<p><i>Nymphaea alba</i> L. (Nymphaeaceae) Epic Name : Kahlara Region : Gandhamadana mountain Verse : 3.155.49</p>
19.	<p><i>Coscinium fenestratum</i> (Gaertn.) Colebr. (Menispermaceae) Epic Name : Kaliyaka Region : Himavat Verse : 3.175.10</p>
20.	<p><i>Gmelina arborea</i> L. (Verbenaceae) Epic Name : Kasmari Region : Gandhamadana mountain Verse : 3.155.42</p>
21.	<p><i>Butea monosperma</i> (Lamk.) Taub. (Papilionaceae) Epic Name : Kimsuka, Palasa Region : Gandhamadana mountain, Saraswati river Verse : 3.155.46; 9.36.58</p>
22.	<p><i>Hollarrhena pubescens</i> Wall. ex G.Don (Apocynaceae) Epic Name : Kutja Region : Gandhamadara mountain Verse : 3.155.45</p>
23.	<p><i>Nymphaea nouchali</i> Burm. f. (Nymphaeaceae) Epic Name : Kumuda, Indivara, Utpala Region : Gandhamadana mountain, Malyavant mountain, Pampa lake Verse : 3.155.49; 3.266.3; 3.264.1</p>
24.	<p><i>Barleria prionitis</i> L. (Acanthaceae)</p>

	<p>Epic Name : Kurabaka Region : Gandhamadana mountain Verse : 3.155.58</p>
25.	<p><i>Pandanus odoratissimus</i> L.f. (Pandanaaceae) Epic Name : Ketaka Region : Lake of Dvaitavana, Gandhavadana mountain, King Kusik country Verse : 3.296.43; 3.155.44, 45; 13.5.4.4</p>
26.	<p><i>Nymphaea rubra</i> Roxb. ex Andrews (Nymphaeaceae) Epic Name : Lake on Gandhamadana mountaiin Region : Kokaneda Verse : 3.155.49</p>
27.	<p><i>Bauhinia purpurea</i> L. (Caesalpiniaceae) Epic Name : Kovidara Region : Gandhamadana mountain Verse : 3.155.46</p>
28.	<p><i>Manilkara hexandra</i> (Roxb.) Dubard (Sapotaceae) Epic Name : Ksirin Region : Gandhamadana mountain Verse : 3.155.42</p>
29.	<p><i>Michelia champaca</i> L. (Magnoliaceae) Epic Name : Ksaundra, Champaka Region : Gandhamadana mountain, King kusika country Verse : 3.155.41; 13.5.45</p>
30.	<p><i>Senegalia catechu</i> (L.f.) P.J.H. Hurter & Mabb. (Mimosaceae) [Syb.Acacia catechu. (L.) Willd.] Epic Name : Khadira Region : Bank of Saraswati river, Lanka Verse : 3.174.23; 3.268.3</p>
31.	<p><i>Phoenix dactylifera</i> L. (Arecaceae) Epic Name : Kharjura Region : Gandhamadana mountain Verse : 3.155.41</p>
32.	<p><i>Santalum album</i> L. (Santalaceae) Epic Name : Canada Region : Gandhamadana mountain Verse : 3.155.44</p>

33.	<i>Hibiscus rosa-sinensis</i> L. (Malvaceae) Epic Name : Japa Region : Sveta mountain Verse : 3.220.23
34.	<i>Syzygium cumini</i> (L.) Skeels (Myrtaceae) Epic Name : Jambu Region : Gandhamadana mountain Verse : 3.155.42
35.	<i>Garcinia xanthochymus</i> Hook. f.ex T.Anderson (Clusiaceae) Epic Name : Tamala Region : Gandhamadana mountain Verse : 3.155.46
36.	<i>Borassus flabellifer</i> L. (Arecaceae) Epic Name : Tala Region : Dvaitavana, Gandhamadana mountain Verse : 3.25.17; 3.155.46
37.	<i>Diospyros melanoxylon</i> Roxb. (Ebenaceae) Epic Name : Tinduka Region : Gandhamadana Verse : 3.155.40
38.	<i>Wendlandia exerta</i> (Roxb.) DC. (Rubiaceae) Epic Name : Tilaka Region : Gandhamadana mountain Verse : 3.155.59
39.	<i>Punica granatum</i> L. (Punicaceae) Epic Name : Dadima Region : Gandhamadana mountain Verse : 3.155.40
40.	<i>Cedrus deodara</i> (Roxb. ex Lamb.) G.Don (Pinaceae) Epic Name : Devadaru Region : Gandhamadana mountain, Himavat Verse : 3.155.46; 3.175.10
41.	<i>Cocos nucifera</i> L. (Arecaceae) Epic Name : Narikela Region : Gandhamadana mountain Verse : 3.155.40

42.	<i>Haldina cordifolia</i> (Roxb.) Ridsdale (Rubiaceae) [Syn. <i>Adina cordifolia</i> (Roxb.) Hook. f. ex Brand.] Epic Name : Nipa Region : Dvaitavana, Gandhamadana mountain, bank of Saraswati river Verse : 3.25.17; 3.155.41; 3.179.14
43.	<i>Oryza sativa</i> L. (Poaceae) Epic Name : Nivara Region : Bank of Saraswati River Verse : 3.179.14
44.	<i>Artocarpus heterophyllus</i> Lamk. (Moraceae) Epic Name : Panasa Region : Gandhamadana mountain Verse : 3.155.41
45.	<i>Stereospermum suaveolens</i> (Roxb.) DC. (Bignoniaceae) Epic Name : Patala, Patalli Region : Gandhamadana mountain Verse : 3.155.42; 3.155.62
46.	<i>Nyctanthes arbor-tristis</i> L. (Oleaceae) Epic Name : Parijata Region : Gandhamadana mountain, Sveta mountain, Saraswati river Verse : 3.155.46; 3.220.23; 9.36.60
47.	<i>Bambusa arundinacea</i> Willd. (Poaceae) Epic Name : Venu Region : River Sailoda (Between Meru and Madara mountains) Verse : 2.48.2
48.	<i>Salvadora persica</i> L. (Salvadoraceae) Epic Name : Pilu Region : Bank of Saraswati river, Kamboja country Verse : 3.174.23; 2.47.4
49.	<i>Calophyllum inophyllum</i> L. (Clusiaceae) Epic Name : Punnaga Region : Gandhamadana mountain Verse : 3.155.45
50.	<i>Aglaia elaeagnoides</i> (Juss.) Benth. (Meliaceae) Epic Name : Priyangu Region : Along Narmada river (Avanti country)

	Verse : 3.87.2
51.	<i>Buchanania lanzan</i> Spreng. (Anacardiaceae) Epic Name : Priyala Region : Gandhamadana mountain Verse : 3.61.5
52.	<i>Ficus lacor</i> Buch.-Ham. (Moraceae) Epic Name : Plaksa Region : Saraswati River, Gandhamadana mountain, Plakasavatarana Tirth at Yamuna river Verse : 3.82.5; 3.174.23; 3.155.42; 3.129.13
53.	<i>Mimusops elengi</i> L. (Sapotaceae) Epic Name : Bakalu Region : Gandhamadana mountain Verse : 3.155.46, 46, 62
54.	<i>Ziziphus mauritiana</i> Lamk. (Rhamnaceae) Epic Name : Badari Region : Gandhamadana mountain, Bank of Saraswati river, Uttara Kurus near kailasa mountain Verse : 3.155.42; 3.174.23; 3.145.10, 17-19
55.	<i>Terminalia bellirica</i> (Gaertn.) Roxb. (Combretaceae) Epic Name : Bibhitaka Region : Gandhamalana mountaiin Verse : 3.155.42
56.	<i>Aegle marmelos</i> (L.) Corr. (Rutaceae) Epic Name : Bilva Region : Gandhamadana mountain, Dvaita forest, Saraswati river Verse : 3.155.42; 3.17.4.23
57.	<i>Citrus medica</i> L. (Rutaceae) Epic Name : Bijapuraka Region : Gandhamadana mountain Verse : 3.155.40
58.	<i>Semecarpus anacardium</i> L.f. (Anacardiaceae) Epic Name : Bhallataka Region : Gandhamadana mountain Verse : 3.155.42
59.	<i>Erythrina variegata</i> L. (Papilionaceae) Epic Name : Mandara

	<p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.45</p>
60.	<p><i>Tecomella undulata</i> (Smith) Seem. (Bignoniaceae)</p> <p>Epic Name : Rauhataka</p> <p>Region : Bank of Saraswati river, West Khandavaprastha</p> <p>Verse : 3.174.23; 2.29.4</p>
61.	<p><i>Artocarpus lakucha</i> Roxb. (Moraceae)</p> <p>Epic Name : Likuca</p> <p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.41</p>
62.	<p><i>Ficus benghalensis</i> L. (Moraceae)</p> <p>Epic Name : Vata, Nyagrodha</p> <p>Region : Gandhamadana mountain, Gayasiras Kurushetra, Pramanakoti (Bank of Ganga river, North of Hastinapura).</p> <p>Verse : 3.155.42; 3.85.8; 7.15.3.24; 3.13.74</p>
63.	<p><i>Calamus rotang</i> Roxb. (Arecaceae)</p> <p>Epic Name : Vetasa</p> <p>Region : Dvaitavana, Bank of Saraswati river</p> <p>Verse : 3.296.43; 3.174.23</p>
64.	<p><i>Prosopis cineraria</i> (L.) Druce (Mimosaceae)</p> <p>Epic Name : Sami, Shami</p> <p>Region : Bank of Saraswati river, Kamboja country, Kuru Jungal Country</p> <p>Verse : 3.174.23; 11.47.4; 8.3.0.24</p>
65.	<p><i>Saccharum bengalens</i> (Retz.) H. Scholz (Poaceae)</p> <p>(Syn.S.munja Roxb.)</p> <p>Epic Name : Sara</p> <p>Region : Sveta mountain</p> <p>Verse : 3.2.14.10</p>
66.	<p><i>Shorea robusta</i> Gaertn. f. (Dipterocarpaceae)</p> <p>Epic Name : Sala</p> <p>Region : Gandhamadana mountain, Dvaitavana</p> <p>Verse : 3.155.46, 62; 3.25.17</p>
67.	<p><i>Bombax ceiba</i> L. (Bombacaceae)</p> <p>Epic Name : Salmali</p> <p>Region : Gandhamadana mountain</p> <p>Verse : 3.155.46</p>

68.	<i>Dalbergia sissoo</i> Roxb. (Papilionaceae) Epic Name : Simsapa Region : Gandhamadana mountain Verse : 3.155.46
69.	<i>Albizia lebbeck</i> (L.) Benth. (Mimosaceae) Epic Name : Sirisa Region : Bank of Saraswati river Verse : 3.155.46
70.	<i>Alstonia scholaris</i> (L.) R.Br. (Apocynaceae) Epic Name : Saptaparna Region : Gondhamadana mountain Verse : 3.155.45
71.	<i>Vitex negunda</i> L. (Verbenaceae) Epic Name : Sindhuvara Region : Dvaitavana, Gandhamadana mountain Verse : 3.296.43; 3.155.57
72.	<i>Euphorbia neriifolia</i> L. (Euphorbiaceae) Epic Name : Snuha Region : Bank of Saraswati Verse : 3.174.23
73.	<i>Terminalia chebula</i> Retz. (Combretaceae) Epic Name : Haritaka Region : Gandhamadana moutain Verse : 3.155.42
74.	<i>Vechellia farnesiana</i> (L.) Wight et Arn. (Momosaceae) Epic Name : Arimeda Region : Kurushetra Verse : 15.3.24
75.	<i>Dillenia indica</i> L. (Dilleniaceae) Epic Name : Bhavya Region : King Kusika country Verse : 5.4.5
76.	<i>Cordia dichotoma</i> G.Forst. (Boraginaceae) Epic Name : Uddalak Region : King Kusika country Verse : 5.4.4

Results And Discussion:

The land, features, inhabitants and earth phenomena are informed by the science of geography. It includes study of the diverse environments, places and earth's spaces, apart from relationships between mankind and his environments. It bridges the social and natural sciences. Geography in relation to plants or their groups encompasses the study of how plants are distributed across the earth space. The epic Mahabharata is although investigated scientifically, as stated earlier, it has remained untouched yet in phytogeographical perspective. The present author examined the plant species and their occurrence or distribution as documented in the epic Mahabharata.

It appears relevant to focus on the floristic composition related to various places in the Mahabharata. As many 76 plant species (66 dicotyledons, 09 monocotyledons and a single gymnosperm) belonging to 66 genera (56 dicotyledons, 09 monocotyledons and a single gymnosperm) and 40 families (35 dicotyledons, 04 monocotyledons and 01 gymnosperm). The dicotyledonous angiosperms are have major share in this ancient record.

Secondly, it is important to note the names of places, mountains, rivers, region of certain ancient kingdom, etc. Obviously, these are old names but are notable within the confines of Indian landmass and its present neighborhood. The mountains mentioned are: Gandhamadana mountain, Kailasa mountain, Vaidurysinkhara Meru and Mandara mountain and Gayasiras mountain. The following places, localities or geographical elements have appeared in this lexicon as: (i) Names of rivers e.g. Saraswati, Ganga, Sailoda, Narmada, Yamuna. (ii) Countries e.g. Kumboja country, King Kusika country. (iii) Vana (Forest) e.g. Dvaitavana, Kamyaka forest, Kuru Jangal, Dvaita forest. (iv) Neighboring region e.g. Lanka., (v) Lake e.g. Near Dvaitavana, Pampa Laka., (vi) Tirth e.g. Sasayana Tirtha (Kailasa mountain) Pindaraka Tirtha, Plaksavatarana Tirtha. (vii) Specific region e.g. Himvat, Uttara Kurus (Near Kailasa mountain), West of Khandavaprastha, Kurushetra, Pramankoti).

It is to be noted that some of these names are also found in modern era. There are others which are old ones but certainly they are found within the geographical limits of Indian subcontinent. The neighboring country *viz.*, Lanka (Ceylon, Sri Lanka) is also mentioned which generally finds place in Indian civilization, mythology and history. Kailasa mountain is religiously connected with Indian culture, although presently it is not under the govern of India. All there geographical features have been documented on the bases of plant distribution or occurrence and are hence indicative of phytogeography of ancient India. All these plant species are integral part of Indian biodiversity in the present era. It is thus some elements of Indian phytogeography are noteworthy through the contents of the epic Mahabharata. This investigation also thus add one more scientific account from the Mahabharata. Habitats of some aquatic, desertic and mountainous plant species are clearly noted by the sage Vyasa. He thus has in-depth ecological knowledge of Indian territory. Nearly all corners of India are also covered by him.

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