

# Ethnobotanical survey & Conservation status of the herbs around Sri Nrusinghanath Temple, Bargarh, Odisha, India

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**Abstract-** Sri Nrusinghanath Temple, Odisha is an International tourist place for its religious importance along with diverse flora with hills, numerous waterfalls and springs. This area is covered by Gandhamardan forest range, the iconic medicinal plant forest mentioned in The Ramayana. Due to its unique biodiversity, government of Odisha has halted the exploration and mining activities in this place, which is otherwise one of the richest sources of Bauxite in Asia. Few studies were conducted previously to map the floras of Gandhamardan Hill forest range but none have attempted to map the floras around the temple. The present study is considered to assess the threat level to plants found around the famous Nrusinghanath Temple, Bargarh Odisha and its Ethnomedicinal use among the locals.

**Index Terms-** Bauxite, The Ramayana, Ethnomedicinal

## I. INTRODUCTION

India is blessed with a rich cultural diversity which is reflected in the formal and informal system of medicines that are practised in different states, different sects. AYUSH system of medicines is practised and wholeheartedly accepted for its century old proven records, high safety index & cost effectiveness. Out of AYUSH, the Siddha system is practised mostly in Tamil Nadu. Unani system is practised among all but especially Muslim communities, Yogas incorporated in Metros as part of lifestyle. This is one example of diversity of different systems of medicines in India.

In Odisha the biological diversity is found everywhere & specially in Northern & Western Odisha. Western Odisha is blessed with many biological hotspots and one among them is The Gandhamardan Hill forest range. It is quite famous among tourists and researchers for its diverse flora. Every year hundreds of researchers from many Premier institutes such as ILS, IPS Bhubaneswar (Odisha) IMS, BHU (Varanasi), IPGTRA (Jamnagar), AIIA (Delhi), BSI (Kolkata) etc visits here to witness the flora and to get their research material. Here we have tried to

map the floras (herbs) around the Site at the bottom of hill, around the religious site.

The geographical location of Nrusinghanath Temple is 21.178583°N, 84.452080°E<sup>1</sup>. This place was also the centre of Buddhist scriptural learning centre according to Huen Tsang, the famous Chinese traveller<sup>2</sup>. Bargarh district is home to many indigenous tribes and these peoples use herbal medications as the first line of treatment from forest healers or Baidyas or Folklore physicians. These Folklore practitioners use plants from the adjoining forest for treatment purpose. The collections are mostly unscientific in nature which may lead to partial loss of few floras. So, it is aimed to survey the area and report the threat level of the flora so as to devise new policies based on this data.

## II. MATERIAL & METHODS

Field trips were arranged for moving to different areas around the temple during this study period. The local healers, folklore practitioners, temple priests, and old persons of this area were interviewed to record the ethnobotanical use of surveyed plants and their local names were recorded. The plants collected were identified with the help of the flora books (HH Haines, 1921-1925 & Brahmam, Saxena, 1994-1996). The latest botanical nomenclatures were crosschecked with <https://www.theplantlist.org> for authenticity. The herbarium specimen was deposited in the Dravyaguna department Herbarium store, SSN Ayurveda college & RI, Paikmal.

## III. RESULTS

The collected specimen species were enumerated below in a table format. A total of 160 numbers of species were recorded. Few species were planted earlier and rest are wild, propagated naturally from the reserve forest. Few aquatic plants were seen and were duly recorded. The folklore therapeutic uses were mentioned & the collected flora was labelled according to their conservation status.

**Table 1.**

<b>SR NO</b>	<b>NAME SANS/LOCAL</b>	<b>BOTANICAL NAME</b>	<b>FAMILY</b>	<b>STATUS</b>
1	Somalata	<i>Sarcostemma acidum</i> (Roxb.)	Apocynaceae	Endangered
2	Sumerkhai	<i>Byttneria herbacea</i> (Roxb.)	Malvaceae	Threatened
3	Shati	<i>Curcuma zedoaria</i> (Christm.) Roscoe.	Zinzeberaceae	Threatened
4	Haridra	<i>Curcuma longa</i> L.	Zinzeberaceae	Data deficient
5	Krishna haridra	<i>Curcuma caesia</i> (Roxb.)	Zinzeberaceae	Critically endangered
6	Brihat ela	<i>Amomum subulatum</i> (Roxb.)	Zinzeberaceae	Data deficient
7	Tulsi	<i>Oscimum tenuiflorum</i> L.	Lamiaceae	Vulnerable
8	Dahana	<i>Ocimum basilicum</i> L.	Lamiaceae	Vulnerable
9	Sadabahr(p)	<i>Catharanthus roseus</i> var. <i>angustus</i>	Apocynaceae	Endangered
10	Sadabahr(w)	<i>Catharanthus roseus</i> var. <i>albus</i>	Apocynaceae	Endangered
11	Shala parni	<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	Vulnerable
12	Prishna parni	<i>Uraria picta</i> (Jacq.) DC.	Fabaceae	Vulnerable
13	Mashaparni	<i>Teramnus labialis</i> (L.f.) Spreng	Fabaceae	Vulnerable
14	Nili	<i>Indigofera tinctoria</i> L.	Fabaceae	Vulnerable
15	Sarapunkha	<i>Tephrosia purpurea</i> (L.) Pers	Fabaceae	Vulnerable
16	Gunja (White)	<i>Abrus precatorius</i> L.	Fabaceae	Endangered
17	Gunja (Red)	<i>Abrus precatorius</i> L.	Fabaceae	Endangered
18	Gunja (Black)	<i>Abrus precatorius</i> L.	Fabaceae	Endangered
19	Aparajita(n)	<i>Clitoria terniata</i> L.	Fabaceae	Vulnerable
20	Aparajita (White)	<i>Clitoria terniata</i> L.	Fabaceae	Vulnerable
21	Bverberihati	<i>Solanum indicum</i> L.	Solanaceae	Susceptible
22	Kantakari	<i>Solanum surattense</i> Burm. F.	Solanaceae	Endangered
23	Bharangi (1)	<i>Clerodendrum indicum</i> (L.) Kuntze.	Verbenaceae	Vulnerable
24	Bharangi (2)	<i>Clerodendrum serratum</i> (L.) Moon	Verbenaceae	Vulnerable
25	Danti	<i>Baliospermum montanum</i> (Willd.) Muell-Arg	Euphorbiaceae	Vulnerable
26	Dravanti	<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	Vulnerable
27	Aswagandha	<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Endangered
28	Patalagaruda	<i>Cocculus hirsutus</i> (L.) Diels	Menispermaceae	Endangered

29	Dhanwantari	<i>Cymbopogon citratus</i> (DC.)	Poaceae	Least concern.
30	Surana	<i>Amorphophallus campanulatus</i> (Roxb.) Blume ex Decne.	Araceae	Least concern.
31	Chitraka(s)	<i>Plumbago zeylenica</i> L.	Plumbaginaceae	Vulnerable
32	Chitraka(r)	<i>Plumbago indica</i> L.	Plumbaginaceae	Endangered
33	Tanduliyaka	<i>Amaranthus spinosum</i> L.	Amaranthaceae	Least concern
34	Palua	<i>Maranta arundinaceae</i> L.	Marantaceae	Vulnerable
35	Churia kanda	<i>Eulophia laura</i> Lindl.	Orchidaceae	Endangered
36	Vana palandu (r)	<i>Urginea indica</i> (Roxb.) Kunth	Liliaceae	Vulnerable
37	Musta	<i>Cyperus rotundus</i> L.	Cyperaceae	Least concern
38	Nakchini	<i>Centipeda orbicularis</i> Lour.	Asteraceae	Least concern
39	Mundi/Bhumi - kadamba	<i>Sphaeranthus indicus</i> Linn.	Asteraceae	Least concern
40	Kokilakshya	<i>Astercantha longifolia</i> (L.) Nees.	Acanthaceae	Least concern
41	Kaphgajari	<i>Aclypha indica</i> L.	Euphorbiaceae	Data deficient
42	Telia kand	<i>Remusatia vivipara</i> (Roxb.) Schott.	Araceae	Least concern
43	Gandha sunthi-1	<i>Hedychium spicatum</i> (Ham-ex-Smith)	Zinzeberaceae	Endangered
44	Gandha Sunthi-2	<i>Hedychium spicatum</i> (Ham-ex-Smith) species.	Zinzeberaceae	Endangered
45	Kebuka- 1	<i>Costus speciosus</i> (J. Koenig) Sm.	Zinzeberaceae	Threatened
46	Kebuka -2	<i>Costus speciosus</i> (J. Koenig) Sm.	Zinzeberaceae	Threatened
47	Ushira	<i>Vitiveria zizanioides</i> (L.) Nash.	Poaceae	Threatened
48	Stevia	<i>Stevia rebaudiana</i> Bertoni	Asteraceae	Vulnerable
49	Jyotishmati	<i>Celastrus paniculatus</i> Willd.	Celastraceae	Vulnerable.
50	Meshasringi	<i>Gymnema sylvestris</i> (Retz.) Schult.	Apocynaceae	Endangered
51	Pippali(small)	<i>Piper longum</i> L.	Piperaceae	Endangered
52	Pippali (Big)	<i>Piper chaba</i> Hunter	Piperaceae	Endangered
53	Pippali Mula	<i>Piper longum</i> L.	Piperaceae	Endangered
54	Gajapippali	<i>Scindapsus officinalis</i> (Roxb) Schott.	Araceae	Vulnerable
55	Trivrit (Sweta)	<i>Operculina tupethum</i> (Linn) Silva Manso	Convolvulaceae	Endangered
56	Trivrit (Rakta)	<i>Operculina tupethum</i> (Linn) Silva Manso	Convolvulaceae	Endangered
57	Vacha	<i>Acorus calamus</i> . (AC) Linn.	Araceae	Endangered
58	Ghoda Vacha	<i>Alpinia galanga</i> (L.) Willd.	Zinzeberaceae	Endangered
59	Amra haridra	<i>Curcuma amada</i> Roxb.	Zinzeberaceae	Vulnerable
60	Kakamachi	<i>Solanum nigrum</i> L.	Solanaceae	Data deficient

61	Tankari	<i>Physalis minima</i> L.	Solanaceae	Data deficient
62	Kakajangha	<i>Peristrophe bicalyculata</i> (Retz.) Nees	Acanthaceae	Not evaluated
63	Gandhaprasarani	<i>Paederia foetida</i> L.	Rubiaceae	Not evaluated
64	Langali	<i>Glorisa superba</i> L.	Colchicaceae	Rare.
65	Asthi srimkhala	<i>Cissus quadrangularis</i> L.	Vitaceae	Vulnerable
66	Jeevanti	<i>Leptadenia reticulata</i> (Retz.) Wight	Apocynaceae	Threatened
67	Bishalyakarani	<i>Tridax procumbens</i> L.	Asteraceae	Threatened
68	Arka puspi	<i>Holostemma ada-kodien</i> (Schult.)	Apocynaceae	Endangered
69	Kalamegha	<i>Andrographis paniculata</i> (Burm.fil.) Nees	Acanthaceae	Endangered
70	Satyanasi	<i>Argemone mexicana</i> Linn.	Euphorbiaceae	Least concern
71	Mandooka parni	<i>Centella asiatica</i> L.	Apiaceae	Vulnerable
72	Bramhi	<i>Bacopa monnieri</i> L.	Plantaginaceae	Vulnerable
73	Palandu	<i>Allium cepa</i> L.	Amaryllidaceae	Data deficient
74	Lasuna	<i>Allium sativum</i> L.	Amaryllidaceae	Data deficient
75	Ghritakumari	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	Vulnerable
76	Chopchini 1	<i>Smilax china</i> L.	Liliaceae	Critically endangered
77	Parna yavani	<i>Coleus amboinicus</i> Benth.	Lamiaceae	Susceptible
78	Mastaksha	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Data deficient
79	Pita saag	<i>Glinus oppositifolius</i> (L.) Aug.DC.	Molluginaceae	Vulnerable
80	Changeri	<i>Oxalis corniculata</i> L.	Oxalidaceae	Least concern
81	Sahadevi	<i>Vernonia cinerea</i> L.	Euphorbiaceae	Least concern
82	Raja patha	<i>Cyclea peltate</i> Hook. f. & Thoms.	Menispermaceae	Vulnerable
83	Vridhdadaruka	<i>Argyreia nervosa</i> (Burm.fil.) Bojer	Convolvulaceae	Critically endangered
84	Gojihva	<i>Elephantopus scaber</i> Auct.non L.	Boraginaceae	Least concern.
85	Madhavi	<i>Hiptage benghalensis</i> (L.) Kuntze.	Malpighiaceae	Invasive weed.
86	Bhringaraja white	<i>Eclipta alba</i> L.	Asteraceae	Least concern
87	Bhringaraja yellow	<i>Wedelia chinensis</i> Osbeck.	Asteraceae	Least concern
88	Ayappan	<i>Ayapana triplinervis</i> (Vahl) R.M. King	Asteraceae	Data deficient
89	Kanisiri	<i>Commelina benghalensis</i> L.	Commelinaceae	Least concern
90	Vakuchi	<i>Psoralea corylifolia</i> L.	Fabaceae	Endangered
91	Gokshura (Big)	<i>Pedaliium murex</i> L.	Pedaliaceae	Threatened
92	Sariva	<i>Hemidesmus indicus</i> (L.) R.Br.	Apocynaceae	Susceptible

93	Krushna sariva	<i>Ichnocarpus frutescens</i> (L.) W.T. Aiton	Apocynaceae	Susceptible
94	Bhumi amalaka	<i>Phyllanthus niruri</i> L.	Euphorbiaceae	Susceptible
95	Shatavari	<i>Asparagus racemosus</i> Willd.	Liliaceae	Threatened.
96	Barahi kanda	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Vulnerable
97	Vidari kanda	<i>Pueraria tuberosa</i> (Willd.) DC.	Fabaceae	Susceptible
98	Parpataka	<i>Fumaria indica</i> (Hauskn.) Pugsley.	Fumariaceae	Threatened
99	Dronopuspi	<i>Leucas cephalotes</i> (Roth.) Spreng	Lamiaceae	Data deficient
100	Adha puspi	<i>Tricodesma indicum</i> (L.) R.Br.	Boraginaceae	Data deficient
101	Shiva lingi	<i>Bryonia laciniata</i> Linn.	Cucurbitaceae	Data deficient
102	Murba	<i>Marsdenia tenacissima</i> Wight. & Arn.	Asclepiadaceae	Vulnerable
103	Lazzalu	<i>Mimosa pudica</i> L.	Mimosaceae	Vulnerable
104	Hastikarna palasha	<i>Butea frondosa</i> K.D. Koenig ex Roxb.	Fabaceae	Endangered
105	Latakasturi	<i>Hibiscus abelmoschus</i> Medik.	Malvaceae	Endangered
106	Guduchi	<i>Tinospora cordifolia</i> (Willd.) Miers.	Menispermaceae	Vulnerable
107	Uturali	<i>Pergularia daemia</i> (Forsskal) Chiov.	Apocynaceae	Susceptible
108	Apamarga	<i>Achyranthes aspera</i> L.	Amaranthaceae	Least concern
109	Vanya haridra -1	<i>Curcuma aromatica</i> Salisb.	Zinzeberaceae	Threatened.
110	Mahakala	<i>Trichosanthes bracteata</i> (Lam.) Voigt.	Cucurbitaceae	Data deficient
111	Patra sizu	<i>Euphorbia thymefolia</i> L.	Euphorbiaceae	Not evaluated
112	Sapta pheni	<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	Cactaceae	Least concern
113	Vamsi gopala	<i>Peucedanum nagpurensis</i> (C.B Clarke)	Apiaceae	Endangered
114	Girel	<i>Indigofera cassioides</i> DC.	Fabaceae	Data deficient
115	Punarnava	<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	Threatened
116	Barshabhu	<i>Trianthema portulacastrum</i> L.	Aizoaceae	Not evaluated
117	Hulhulia	<i>Gynandropsis gynandra</i> L.	Cleomaceae	Not evaluated
118	Parna veeja 1	<i>Bryophyllum pinnatum</i> (Lam.) Kurz.	Crassulaceae	Data deficient
119	Chakra marda	<i>Cassia tora</i> Linn.	Fabaceae	Least concern
120	Datura	<i>Calotropis procera</i> (Aiton)	Apocynaceae	Vulnerable
121	Sweta mushali	<i>Chlorophytum borivilianum</i> Linn.	Asperagaceae	Vulnerable
122	Krishana mushali	<i>Curculigo orchoides</i> Gaertn.	Hypoxidaceae	Endangered
123	Mayura chulia	<i>Elephantopus scaber</i> Linn.	Asteraceae	Not evaluated
124	Bala	<i>Sida cordifolia</i> Linn.	Malvaceae	Least concern

125	Badhuani bala	<i>Sida acuta</i> Burm.	Malvaceae	Least concern
126	Ghusuri bala	<i>Sida prostate</i> Linn	Malvaceae	Least concern
127	Ashadhua	<i>Capparis zeylenica</i> L.	Capperidaceae	Threatened
128	Jala Lavanga	<i>Ludwigia octovalvis</i> (Jacq.)	Onagraceae.	Least concern
129	Gopa kanhu	<i>Cryptolepis buchmanii</i> . Romer & Schultes.	Apocynaceae	Least concern
130	Chakra kedar	<i>Anamirta cocculus</i> (L.) Wight & Arn.	Menispermaceae	Threatened
131	Rakta mahajala	<i>Lygodium flexuosum</i> (L.) Sw.	Lygodiaceae	Least concern
132	Kukurungu	<i>Blumea lacera</i> (Burm.f.) DC.	Asteraceae	Least concern
133	Pani bael	<i>Cissus repanda</i> Vahl.	Vitaceae	Rare
134	Rasna	<i>Pluchea lanceolata</i> L. (Oliver & Hiern)	Asteraceae	Endangered
135	Rasna	<i>Pluchea indica</i> (L.) Less.	Asteraceae	Endangered
136	Rasna zadi	<i>Blepharispermum Subsessile</i> DC.	Asteraceae	Endangered
137	Rasna (vanda)	<i>Vanda roxburghii</i> R. Br	Orchidaceae	Endangered
138	Dayana.	<i>Artemisia vulgaris</i> L.	Asteraceae	Vulnerable
139	Kapikachhu 1	<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Threatened.
140	Kapikachhu 2	<i>Mucuna bracteata</i> (L.) DC.	Fabaceae	Least concern.
141	Saireyaka	<i>Barleria prionitis</i>	Acanthaceae	Threatened.
142	Pasanaveda1	<i>Bergenia ligulata</i>	Saxifragaceae	Critically endangered
143	Pasanaveda 2	<i>Aerva lanata</i> (L.) Juss. ex. Schult.	Amaranthaceae	Critically endangered
144	Muturi	<i>Smilax zeylenica</i> L.	Liliaceae	Vulnerable
145	Mendha mund	<i>Wattakaka volubillis</i> (L.fil). Stapf.	Apocynaceae	Threatened
146	Mudga parni	<i>Vigna trilobata</i> (L.) Verdc.	Fabaceae	Least concern
147	Pudina	<i>Mentha spicata</i> L.	Lamiaceae	Least concern
148	Dhanyaka	<i>Coriandrum sativum</i> L.	Apiaceae	Data deficient
149	Mithipatti	<i>Scoparia dulcis</i>	Plantaginaceae	Data deficient
150	Khela Ghas	<i>Dactyloctenium aegyptium</i> (L.) Willd	Poaceae	Not Evaluated.
151	Phuli jhadu	<i>Thysanolaena maxima</i> (Roxb.) Kuntze.	Poaceae	Not Evaluated.
152	Gokshura (Small)	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Threatened
153	Patha	<i>Cissampelos pareira</i> L.	Menispermaceae	Vulnerable
154	Ana sorisha	<i>Cleome gynandra</i> L.	Cleomaceae	Vulnerable
155	Sanapuspi	<i>Crotalaria hirsuta</i> Willd.	Fabaceae	Vulnerable
156	Mahabala	<i>Abutilon indicum</i> (L.) Sweet.	Malvaceae	Endangered

157	Gandhia ghch	<i>Ageratum conyzoides</i> L.	Fabaceae	Vulnerable
158	Nakali bhringaraj	<i>Eclipta prostate</i> (L.) L.	Asteraceae	Data deficient.
159	Dam buti	<i>Tylophora indica</i> (Burm.f) Merr.	Apocynaceae	Endangered
160	Telegraph plant	<i>Codariocalyx motorius</i> (Houtt.) H	Fabaceae	Endangered

#### IV. RESULT & DISCUSSION

Biological richness of any area plays a vital role in determining its social, economic, cultural and ethnic identity. The floral diversity of this area is very unique in nature and, this is incorporated in the lifestyle of local populations. This area in the Nrusinghnath forest division is completely unexplored from floristic (Herbs) & from its conservation status. Total 160 herbs were collected and recorded. Leaves were used the most at 73%, whole plant is 2<sup>nd</sup> most used at 18%, Seeds & flowers were used at 7% & tubers are used at 2%. Total 45 numbers of different family were found to be involved & Fabaceae family is predominant with maximum representation with 23 times. The present paper highlights 34 Endangered plant species, 18 Threatened, Critically Endangered 5, Vulnerable 38, Rare 2, Susceptible 7, Least concern 28, Invasive weeds 1, and 8 plant species which are not evaluated yet.

The present study put into record of some novel use of medicinal plants not mentioned anywhere, e.g. Resin of *Boswellia serrata* used for leucorrhoea, the black variety of *Smilax zeylenica* used for Poly Cystic Ovarian Disorders, the bark of *Alstonia scholaris* decoction as immunobooster, Treatment of marital discord by the telegraph plant, the young leaves of *Chlorophytum borivilianum* is used to treat loss of libido, Root of *Pueraria tuberosa* is used to enhance lactation and to treat hydrocoele. Etc.

#### V. CONCLUSION

Increasing demand and unscientific collection & annual forest fire are responsible for destruction of medicinal herbs which leads to its extinction in future. What is observed, the most destructive aspect being the forest fire. The fire remains for months mainly from April to June and repeated forest fire increases the alkalinity of soil which is not be very ideal for regrowth of herbs and care must be taken at higher level to prevent and control these dwindling immensely valuable herb species.

**Conflict of Interest:** Nil

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Graph 1.

