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## A Census of Ethnomedicinal Plants Used In Bankura District, West Bengal.

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### ABSTRACT

While studying the ethnomedicinally concerned plants of Bankura district, it was considered necessary to prepare a checklist assigning each of them to their respective families along with their local names. In total as many as 115 species of vascular plants that could be recorded under different habit categories with species ratio of dicots and monocots as 18.5:1. The Family: Genus: Species ratio (on total basis) was found to be 2.64:2.39:1.10. At Specific, generic and family levels, dicots show higher proportion than monocots. The higher number of families with low number of species indicates diversity essential for stabilizing the community in which they occur. The observed ratio of ethnomedicinally used Tree: Shrub: Herb: Climber being 21:37:41:16 reflects the heterogeneity in plant habit-based utilization pattern which is unlikely to preclude sustainable use of the species in concern.

**Keywords:** census, ethnomedicinal, Bankura district.

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## INTRODUCTION

Plant taxonomy has been putting forth in form and function a kind of plant-database which proves its worth in human benevolence for being enriched with information pertaining to the identification of plants and their uses including medicinal. Identification is the most critical task necessitating thorough study of the plant (6). Misidentification of any medicinally useful species is not unlikely to prove detrimental producing such adverse effect as to even kill a patient. As such it has become essential in any ethnobotanical work to substantiate it with a thorough taxonomic study. As a part of taxonomic study of ethnomedicinal plants, the species after correct identification are enumerated as a taxonomic census with their correct updated nomenclature and vernacular names. An analysis of their habits is also felt essential to have an idea of the ethnomedicinal exploitation of habit-composition and its impact on the stability of the concerned ecosystem. The present communication is a part of the ethnomedicinal investigation in Bankura district, West Bengal. (2).

### Study site

Bankura, a district in the Indian state of West Bengal, is situated between 22° 46' and 23° 38' north latitude and between 86° 36' and 87° 46' east longitude to cover an area of 6881.24 sq km. The district enjoys a typical monsoon type of climate with dry pre-monsoon, monsoon and post monsoon seasons. Such places of forest- and village- areas of the district as Khatra, Ranibandh, Kotulpur, Indas, Beliatore, Barjora and Ratanpur were selected for the present work which are rich in ethnic communities like Santhals, Oraons, Koras, Bhumij, Mech, Mahali, Bedia, Bhumij and Mundas.



Maps showing locations of study site

## MATERIAL AND METHODS

The present work is the outcome of field work carried out since 2012 in monsoon, premonsoon, postmonsoon seasons in the tribal hamlets of the study site. The sites were visited from time to time and information from primary was collected by taking structured questionnaire based interviews of the medicine men, local healers, village headmen and old experienced, knowledgeable men and middle aged women (3) mainly of the Santhal and other communities as mentioned. The information was further cross-checked and enriched through observations and practical experiences gained during field work. Concerned plant specimens were collected, worked out and identified following standard taxonomic literature (6, 3, 1, 5 and 7) and some of them were processed for herbarium preservation. The websites of the International Plant Names Index (IPNI), The Plant List and Tropicos were consulted for updating species names.

**RESULT AND DISCUSSION**

The present study could record a total of 127 species (121 Magnliopsids [dicots] and 6 Liliopsids [monocots]) of ethnomedicinal plants belonging to 115 genera (109 Magnliopsids and 6 Liliopsids) and 48 families (43 Magnliopsids and 5 Liliopsids) of the Magnoliophyta (angiosperms) [Table-1 and Fig 1]. At family, generic and specific levels, the Magnliopsids show the ratio to be 1:2.53:2.81; Liliopsids 1:1.2:1.2. The ratios of Magnliopsid- and Lilliopsid- families used in ethnomedicine were found to be 43:5; genera to be 18.16:1 and species to be 20.16:1. Thus at family, generic and specific, levels, Magnliopsids were seen to dominate over Lilliopsids. Values of generic and species quota per family are 2.39 and 2.64 respectively while the Species quota per genus is 1.10. These values speak of a taxonomic diversity essential for stabilizing the community in which the taxa occur. Habit analysis of the ethnomedicinally used plants, thus recorded, shows the ratio of the Tree: Shurb: Herb: Climber to be 21:37:41:16, that in percentage form being 18.26:32.17:35.65:13.9: 1%.(Table 2, Fig 2 and3) speaks of a wide range plant-forms put into medicinal use.

**Table 1: An enumeration of the plant species used in ethnomedicine in Bankura district, West Bengal.**

**A. Trees**

Sl.No.	Name of the species	Common name	Family
1.	<i>Acacia nilotica</i> (L.)Delile	Babla	Fabaceae
2.	<i>Alstonia scholaris</i> (L.)R.Br.	Chatim	Apocynacea
3.	<i>Azadirachta indica</i> A.Juss.	Neem	Meliaceae
4.	<i>Borassus flabellifer</i> L.	Tal	Palmae
5.	<i>Carica papaya</i> L	Penpe	Passifloraceae
6.	<i>Cassia fistula</i> L.	Bandarlathi	Passifloraceae
7.	<i>Cinnamomum tamala</i> (Buch.-Ham.)T.Nees &Eberm.	Tejpata	Lauraceae
8.	<i>Emblica officinales</i> Gaertn.	Amlaki	Euphorbiaceae
9.	<i>Mangifera indica</i> L.	Am	Anacardiaceae
10.	<i>Madhuca longifolia</i> (J.konig)J.F.Macbr	Mauha	Sapotaceae
11.	<i>Musa paradisiaca</i> var. <i>acicularis</i> G.Forst.	Kola	Musaceae
12.	<i>Nerium odorum</i> Solan.	Karabi	Apocynaceae
13.	<i>Nyctanthes arbortristis</i> L.	Sewli	Oleaceae
14.	<i>Psidium guajava</i> L.	Peyara	Myrtaceae
15.	<i>Saraca asoca</i> (Roxb.) de Wilde.	Ashok	Fabaceae
16.	<i>Shorea robusta</i> Gaertn.	Sal	Dipterocarpaceae
17.	<i>Spodias pinnata</i> (L.f.) Kurz	Amra	Anacardiaceae
18.	<i>Terminalia bellirica</i> (Gaertn.)Roxb.	Bohera	Combretaceae
19.	<i>Terminalia chebula</i> Retz.	Haritaki	Combretaceae
20.	<i>Tinospora cordifolia</i> (Willd.)Miers.	Gulancho	Menispermaceae
21.	<i>Tamarindus indica</i> L.	Tentul	Menispermaceae

**B. Shrubs**

Sl.No.	Name of the species	Common name	Family
1.	<i>Abelmoschus angulosus</i> Wall.ex wight &Arn.	Dharos	Malvaceae

2.	<i>Abelmoschus moschatus</i> Medik.	Latakosturi	Malvaceae
3.	<i>Abroma angusta</i> (L.) L. f.	Ulotkmbal	Sterculiaceae
4.	<i>Abrus precatorius</i> L.	Kuch	Fabaceae
5.	<i>Abutilon indicum</i> (L.)Sw.	Petari	Malvaceae
6.	<i>Acorus calamus</i> L.	Bach	Araceae
7.	<i>Ageratum conyzoides</i> L.	Dochunti	Asteraceae
8.	<i>Argemone mexicana</i> L.	Siyalkata	Papaveraceae
9.	<i>Aristolochia indica</i> L.	Eswarmul	Aristolochiaceae
10.	<i>Bauhinia acuminata</i> L.	Swet kanchan	Fabaceae
11.	<i>Berleria prionites</i> L.	Katabislakarani	Acanthaceae
12.	<i>Brassica cadmea</i> Heldr. ex O.E.Schulz.	Sorse	Brassicaceae
13.	<i>Bryophyllum pinnatum</i> (Lam.)Oken.	Patarkuchi	Crassulaceae
14.	<i>Cajanus cajan</i> (L.)Millsp.	Arahar	Fabaceae
15.	<i>Calotropis procera</i> (Aiton) Dryand.	Akando	Asclepiadaceae
16.	<i>Cassia alata</i> L.	Dadmari	Fabaceae
17.	<i>Cassia sophera</i> L.	Kalkasunda	Fabaceae
18.	<i>Cassia tora</i> L.	Tora	Fabaceae
19.	<i>Catharanthus roseus</i> (L.)G.	Nayantara	Apocynaceae
20.	<i>Clerodendrum serratum</i> (L.)Moon.	Saram lutur	Verbenaceae
21.	<i>Crotalaria retusa</i> L.	Atasi	Fabaceae
22.	<i>Curcuma longa</i> L.	Holud	Zingiberaceae
23.	<i>Datura x metal</i> (pers.) Stapf	Dhutra	Solanaceae
24.	<i>Desmodium motorium</i> (Houtt.)Merr.	Boncharal	Fabaceae
25.	<i>Euphorbia nerifolia</i> L.	Monsa	Euphorbiaceae
26.	<i>Jatropha gossypifolia</i> L.	Varenda	Euphorbiaceae
27.	<i>Justicia adhatoda</i> L.	Basak	Acanthaceae
28.	<i>Lantana camara</i> L.var. <i>aculeata</i> Molenke	Chotra	Verbenaceae
29.	<i>Mentha spicata</i> L.	Pudina	Lamiaceae
30.	<i>Ocimum gratissimum</i> L.	Ram tulsi	Lamiaceae
31.	<i>Ocimum kilimanscharicum</i> Gurke	Korpur tulsi	Lamiaceae
32.	<i>Ocimum sanctum</i> L.	Radha tulsi	Lamiaceae
33.	<i>Ocimum tenuiflorum</i> L.	Krishna tulsi	Lamiaceae
34.	<i>Phlogacanthus thyrsoiflorus</i> (Hardw.) Maberley.	Rambasak	Acanthaceae
35.	<i>Polygala crotalarioides</i> Buch-Ham. ex DC.	Neelkonto	Polygalaceae
36.	<i>Tabernamontana Coronaria</i> R.Br.	Tagar	Apocynaceae
37.	<i>Vitex negundo</i> L.	Nishinda	Verbenaceae

C. Herbs

Sl.No.	Name of the species	Common name	Family
1.	<i>Acalypha indica</i> L.	Muktoborsi	Amaranthaceae
2.	<i>Achyranthes aspera</i> L.	Apang	Amaranthaceae
3.	<i>Aloe barbadensis</i> Mill.	Gritokumari	Amaranthaceae
4.	<i>Amaranthus spinosus</i> L.	Kata note	Amaranthaceae
5.	<i>Andrographis paniculata</i> (Burm.f.)Nees	Kalmegh	Scrophulariaceae
6.	<i>Anisomeles indica</i> (L.)Kuntze	Gopali	Scrophulariaceae
7.	<i>Bacopa monnieri</i> (L.)Wettst.	Brahmi	Scrophulariaceae

8.	<i>Boerhavia diffusa</i> L.	sapune	Nyctaginaceae
9.	<i>Centella asiatica</i> (L.) Urb.	Thankuni	Apiaceae
10.	<i>Clerome icosandra</i> L.	Hurhuria	Capparidaceae
11.	<i>Clitoria ternatea</i> L.	Sada aparajita	Fabaceae
12.	<i>Clitoria ternatea</i> L.	aparajita	Fabaceae
13.	<i>Coleus amboinicus</i> Lour	Pornojoyan	Lamiaceae
14.	<i>Crotalaria pallida</i> Ait.	Jhunjunia	Fabaceae
15.	<i>Croton bonplandianus</i> Baill.	Jhunjhuni	Euphorbiaceae
17.	<i>Cyperus rotundus</i> L.	Mutha	Cyperaceae
18.	<i>Eclipta alba</i> (L.) Hassk.	Kesuth	Asteraceae
19.	<i>Enhydra fluctans</i> Lour.	Hinche	Asateraceae
20.	<i>Eupatorium triplinerve</i> Vahl.	Ayapan	Asteraceae
21.	<i>Flurea interrupta</i> L.	Lalbichuti	Urticaceae
22.	<i>Gymnema</i> <i>sylvestre</i> (Retz.)R.Br.ex Schult	Gurmer	Asclepiadaceae
23.	<i>Heliotropium indicum</i> L.	Hatisur	Boraginaceae
24.	<i>Hemidesmus indicus</i> R.Br.	Anontomul	Asclepiadaceae
25.	<i>Holarrhena antidysenterica</i> (Buch-Ham)Wall.ex G.Don	Kuchrifol	Apocynaceae
26.	<i>Hygrophila schulli</i> (Buch-Ham)M.R.et.S.M.Almeia	Kulekhara	Acanthaceae
27.	<i>Mimosa pudica</i> L.	Lajjabati	Fabaceae
28.	<i>Mirabilis jalapa var procera</i> (Bertol.)Choisy.	Sandhyamani	Nyctaginaceae
29.	<i>Oldenlandia accedens</i> (Miq.)Kuntze	Khetpapa	Rubiaceae
30.	<i>Piper longum</i> L.	Pipul	Piperaceae
31.	<i>Plumbago indica</i> L.	Lalchita	Plumbaginaceae
32.	<i>Plumbago zeylanica</i> L.	Swetchita	Plumbaginaceae
33.	<i>Polygonum orientale</i> L.	panimorich	Polygonaceae
34.	<i>Rauwolfia serpentina</i> Benth.ex Kurz	Sarpogandha	Apocynaceae
35.	<i>Ruellia tuberosa</i> L	Chotpoty	Scrophulariaceae
36.	<i>Scoparia dulcis</i> L.	Mithapata	Scrophulariaceae
37.	<i>Sida cordifolia</i> L	Berela	Malvaceae
38.	<i>Stephania japonica</i> (Thunb.)Miers.	Akangi	Menispermaceae
39.	<i>Swertia changii</i> S.Z.Yang.C.fanchen &Chih H.Chen.	Chirata	Gentianaceae
40.	<i>Tephrosia purpurea</i> (L.)Piers.	Bonneel	Fabaceae
41.	<i>Wedalia chinensis</i> Merrill	Vringoraj	Asteraceae
42.	<i>Zingiber officinale</i> Rosc.	Ada	Zingiberaceae

#### D. Climbers

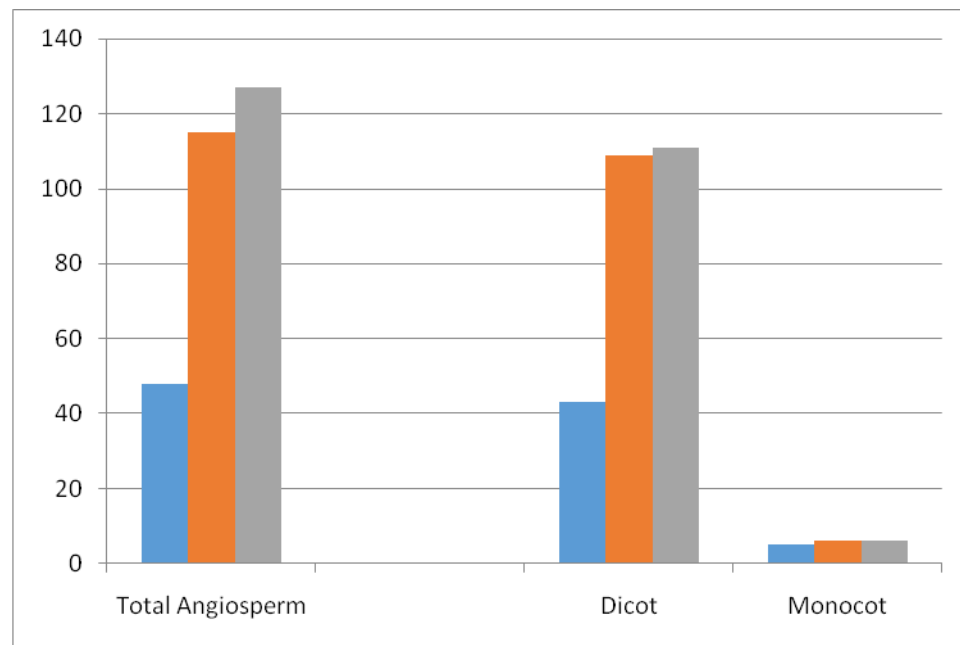
Sl.No.	Name of the species	Common name	Family
1.	<i>Antigonon leptopus</i> Endl.	Anantalata	Polygonaceae
2.	<i>Asparagus recemosus</i> Willd.	Satamuli	Asparagaceae

3.	<i>Cissus quadrangularis</i> L.	Harjora	Vitaceae
4.	<i>Citrullus lanatus</i> (Thunb.)Matsum.&Nakai	Tormuj	Cucurbitaceae
5.	<i>Citrullus melo</i> L	Kharbuja	Cucurbitaceae
6.	<i>Coccinia grandis</i> (L.)Voigt	Telakuch	Cucurbitaceae
7.	<i>Cucumis sativa</i> L.	Sosa	Cucurbitaceae
8.	<i>Cucurbita maxima</i> Duchesne.	Kumra	Cucurbitaceae
9.	<i>Lagenaria siceraria</i> (Molina)standl.	Louw	Cucurbitaceae
10.	<i>Luffa acutangula</i> ( L.)Roxb.	Jhinga	Cucurbitaceae
11.	<i>Momordica charantia</i> L.	Korola	Cucurbitaceae
12.	<i>Momordica coichinchinensis</i> (Lour.)Spreng.	Kakur	Cucurbitaceae
13.	<i>Paederia foetida</i> var. <i>microcarpa</i> Kurz.	Gadal	Rubiaceae
14.	<i>Passiflora suberosa</i> L.	Begambahar	Passifloraceae
15.	<i>Smilax ovalifolia</i> Roxb.	Ramdatan	Smilacaceae
16.	<i>Solanum indicum</i> L	Brihati	Solanaceae

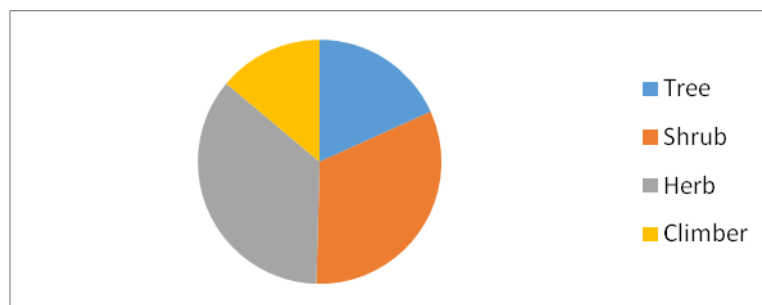
**Table 2: Analysis of habit and taxonomy of the concerned plant species**

<p><b>Habit Analysis</b>  <b>Trees:Shrub:Herb:Climber =21:37:41:16</b></p> <p><b>% values</b>  <b>Trees =18.26%</b>  <b>Shrubs=32.17%</b>  <b>Herbs=35.65%</b>  <b>Climber=13.91%</b></p>	
<p><b>Taxonomic Analysis</b>  <b>Total No of Plant family =48</b>  <b>Dicot=43</b>  <b>Monocot=5</b>  <b>Total No of plant genera=115</b>  <b>Dicot genera=109</b>  <b>Monocot genera = 6</b>  <b>Total number of Plant species=127</b>  <b>Dicot species =121</b>  <b>Monocot species =6</b></p>	
<p><b>Total number of Plant species=127</b></p>	<p><b>Family:Genus:Species</b>  <b>48:115:127=</b>  <b>1:2.39:2.64</b></p>
<p><b>Total number of dicot species=121</b></p>	<p><b>Family:Genus:Species</b>  <b>43:109:121=</b>  <b>1:2.53:2.81</b></p>
<p><b>Total number of monocot species=6</b></p>	<p><b>Family:Genus:species</b>  <b>5:6=6</b>  <b>1:1.2:1.2</b></p>
<p><b>Dicot : Monocot</b></p>	

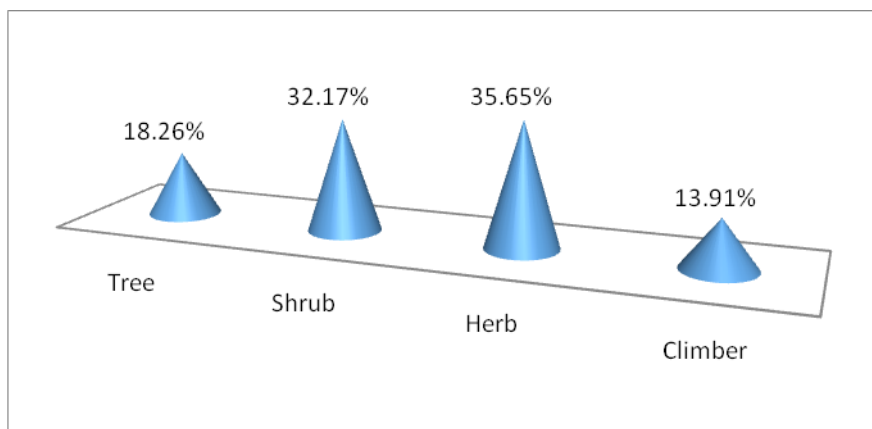
<b>Dicot Family : Monocot family</b> 43:5	<b>Dicot genus : Monocot genus</b> 109:6= 18.16:1	<b>Dicot species:Monocot species</b> 121:6= 20.16:1
<b>% values</b>		
<b>Total Vascular plant</b>	<b>Dicot</b>	<b>Monocot</b>
<b>Family=48</b>	<b>43</b>	<b>5</b>
<b>Genus115</b>	<b>109</b>	<b>6</b>
<b>Species127</b>	<b>121</b>	<b>6</b>
<b>Species quota for each family(Total basis)</b> $127/48=2.64$ <b>Species quota for each genus</b> <b>(Total basis_</b> $127/115=1.10$ <b>Genus quota for each family(Total basis)</b> $115/48=2.39$		



**Fig 1: Bar graph showing the contribution of Magnoliopsids (dicots), Liliopsids (monocots) and the angiosperms in ethnomedicine at Family, Genus and Species levels.**



**Fig 2: Taxonomic analysis of the angiosperms concerned with ethnomedicine in bankura district.**



**Fig 3: Graphical representation of the ethnomedicinally used species according to their habits**

### CONCLUSION

In Bankura district the ethnic communities use a wide taxonomic spectrum of angiosperms for their medicinal purpose covering no less than 127 species of 115 genera belonging to 48 families. Magnoliopsids are used to a greater extent than Liliopsids. The higher number of families with low number of species indicates diversity essential for stabilizing the community in which they occur. The observed ratio of ethnomedicinally used Tree: Shrub: Herb: Climber is 21:37:41:16. The heterogeneity thus reflected in plant habit-based utilization pattern with greater preference to herbs is noteworthy which is likely to offer resilience adequate for sustaining the ethnomedicinal use.

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### REFERENCES

- [1] Bennet SSR. Name changes in Flowering Plants of India and Adjacent Regions. 1987. Dehradun: Triseas Publishers.
- [2] Biswas S, Mukherjee A, and Pal J. Indian Journal of Life Science. 2016;5(2):47-51
- [3] Guha Bakshi DN. Flora of Murshidabad district. 1984. Jodhpur. Scientific Publishers.
- [4] Jain SK and Rao RR. 1977. A Handbook of Field and Herbarium Methods. Today & Tomorrow's Printers and publishers, New Delhi.
- [5] Jain SK. Dictionary Indian Folk Medicines and Ethnobotany. 1991. New Delhi. Deep Publisher.
- [6] Murti SK and Panigrahi G. 1999. Flora of Bilaspur District, M P, Botanical Survey of India, Calcutta: 397-906.
- [7] Prain D. Bengal Plants. 1903. Calcutta. Printers and Publishers.