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Floristic Study of Hasantar Community Forest, Nagarjun, Kathmandu Nepal

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Abstract: - Hsantar community forest (HCF) is located in Ward no. 7 of Nagarjun municipality, Kathmandu, Nepal. It was established in 2051 according to the Forest Act 2049. It lies about 3.5 Km north from Kalanki, Kathmandu. It has subtropical type of vegetation. The present study was carried out to record all the flowering plants found in that forest. It was found that 40 tree species, 16 species **shrubs, 34 species herbs and 10 species of climbers belonging to 90 genera and 49 families in HCF. The forest is characterized by some important medicinal plants like *Melia azedarach, Azadirachta indica, Jugalans regia, Gaultheria fragrantissima, Pogostemon benghalensis* and *Xanthoxylum armatum*. This forest is community managed forest so community needs regular documentation of plant diversity and preservation of this forest.**

Keywords:- *Subtropical, Plant Diversity, Medicinal Plants, Community Managed*.

I. INTRODUCTION

Nepal, a Himalayan country, is situated on the southern slope of the central Himalaya and is located between the latitudes 26˚22' and 30˚ 27' N and the longitudes 80˚ 40' and 88˚ 12' E (Chaudhary, 1998). A total of 6,073 angiosperms, 26 gymnosperms, 534 pteridophytes, 1,150 bryophytes, 365 lichens, 1,822 fungi and 1, 1001 algae have been recorded from Nepal (GoN, 2014). The country occupies about 0.1 percent of global area, but harbors 3.2 percent of the world's known flora. Nepal's biodiversity is threatened by multiple factors. Loss and degradation of natural habitats, such as forests, grasslands, and wetlands due to the expansion of settlements, agriculture and infrastructure; overexploitation; invasion by alien species; and pollution of water bodies remain the predominant threats. Poaching and illegal wildlife trade and human-wildlife conflict are other major direct threats to forest biodiversity, particularly in protected areas (MoFSC, 2014). According to Department of Forestry, total number of community forest is 22,266 which covers 22, 37,670.524 hector land area of Nepal. In Kathmandu 17,135 households are involved in 176 numbers of community forests which covers 5,329.38 hector land area (www.dof.gov.np).

Several works have been done in past for the documentation of plant diversity of preserved forest in Kathmandu. Maharjan *et al*., 2006 studied the Ranibari community forest area (7.6 ha) of Kathmandu and found that the area is floristically rich with a total of 108 vascular species belonging to 58 families and 92 genera which included 54 tree species. Ghimire *et al*., 2005 studied the floristic composition of Bhandarkhal area (6.75 ha) and listed a total of 61 species including 17 tree species. Singh S., 2014 have documented 428 species of vascular plants belonging to 112 families and 323 genera from Shivapuri National park, Central Nepal. The present study reveals the floristic composition of Hasantar Community Forest of Nagarjun Kathmandu. Thus it aims to document the tree, shrubs, herbs and climber diversity present in HCF of Kathmandu.

II. MATERIALS AND METHODS

Hsantar community forest is located in Ward no. 7 of Nagarjun municipality, Kathmandu. It was established in 2051 according to the Forest Act 2049. It lies about 3.5 Km north from Kalanki. It covers 55.4 hectors land area with one Monastery, one water resource, three water reservoir tanks and one very famous temple (Kankali Mandir). It is bounded by Panchakanya Secondary School in east, Tin Pokhari in west, Neupane pokhari in north and Rani ban community forest in south. This Hasantar Community forest is north-west facing natural forest where Katush, Gurans, Chilaune, Utish, Pinus, Setikath, Kafal etc are dominant tree species.

HCF is divided in five major blocks for the easy management and conservation of the forest. According to HCFUG (Hasantar community forest user group) this forest is in Pole stage which means maximum plants have diameter at breast height (DBH) 10 cm to 29.9 cm (HCF operational Plan, 2073).

The climate of Kathmandu is mild, and generally warm and temperate. The summers are much rainier than the winters in Kathmandu. The average annual temperature is 18.1˚C. About 1505 mm of precipitation falls annually. Precipitation is the lowest in November, with an average of 7 mm. The greatest amount of precipitation occurs in July, with an average of 379 mm. At an average temperature of 23.6 ℃, June is the hottest month of the year. The lowest average temperatures in the year occur in January, when it is around 10.1 ℃ (CLIMATE-DATA.org/ Kathmandu).

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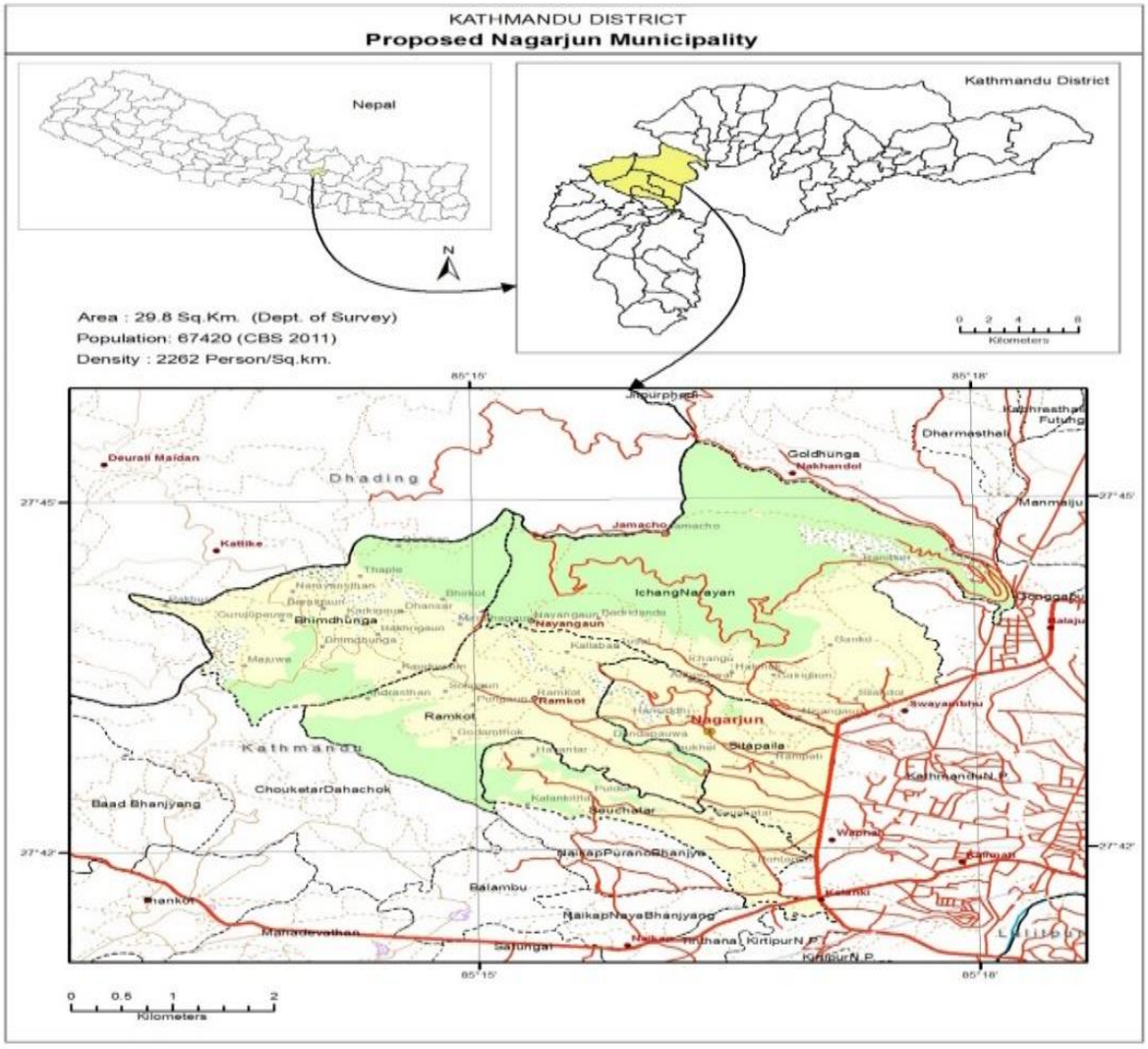

Fig 1:- Location map of Nagarjun Municipality, Kathmandu

The present study was based on field survey conducted during November and December of 2017 and Janaury, February of 2018 to list down all the plants present in Hasantar Community Forest. Plant samples of unidentified species were collected from the field. These were identified with the help of expert and herbarium specimens present in Patan Multiple Campus, Tribhuvan University, Kathmandu Nepal.

III. RESULTS AND DISCUSSION

The present study documented 40 species of trees, 16 species of shrubs, 10 species of climbers and 34 species of herbs belonging to 92 genera and 48 families in HCF (table 2, 3, 4, 5). Among the tree species, trees of Moraceae family are found in highest number. This forest is characterized by some medicinal plants like *Gaultheria fragrantissima, Acacia catechu, Juglans regia, Azadirachta indica, Phyllanthus emblica, justicia adhatoda, Berberis aristata, Pogostemon benghalensis, Cuscuta reflexa, Centella asiatica, Plantago erosa* and *Rumex nepalensis.* The forest also consists of some important timber trees such as *Castanopsis indica, Quercus semicarpifolia, Alnus nepalensis, Schima wallichii,* and *Ziziphus incurva.* Some important religious plants of this forest are *Ficus religiosa, Ficus benghalensis,* and *Elaeocarpus sphaericus.* Some important wild edible fruits recorded in HCF are *Choerospondias axillaris, Castanopsis indica, Juglans regia, Ficus auriculata, Pyrus pashia, Myrica esculenta, Sczygium cumin* and *Phyllanthus emblica.* HCF is also habitat for rare and threatened species like *Michelia champaca, Acacia catecheu* and *Dioscorea deltoidea* (Shrestha & Joshi, 1996).

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S No.	Local names	Scientific names	Family
1	Bhalayo	*Rhus wallichii* sweet	Anacardiaceae
2	Lapsi	*Choerospondias axillaris* (Roxb.) B.L.Burtt LA.W.Hill	Anacardiaceae
3	Utish	*Alnus nepalensis* D. Don.	Betulaceae
4	Bhimsenpati	*Buddleja asiatica* Lour	Buddlejaceae
5	Rudrakshya	*Elaeocarpus sphaericus* L.	Elaeocarpaceae
6	Aangeri	*Lyonia ovalifolia* (Wall.) Drude	Ericaceae
7	Gurans	*Rhododendron arboreum* Sm.	Ericaceae
8	Dhasingare	*Gaultheria fragrantissima* Wall.	Ericaceae
9	Koiralo	*Bauhinia variegata* (L) Benth	Fabaceae
10	Tanki	*Bauhinia purpurea* L.	Fabaceae
11	Khayer	*Acacia catechu* (L.) Willd.	Fabaceae
12	Dhale Katush	*Castanopsis indica* A. Dc.	Fagaceae
13	Phalat	*Quercus lantana* Sm.	Fagaceae
14	Kharsu	*Quercus semicarpifolia* Roxb.	Fagaceae
15	Bajh	*Quercus incana* W. Bartram	Fagaceae
16	Mauwa	*Engelhardia Spicata* Blume	Juglandaceae
17	Okhar	*Juglans regia* L	Juglandaceae
18	Kutmero	*Litsea monopelata* Pers.	Lauraceae
19	Asare phool	*Lagerstroemia indica* L.	Lythraceae
20	Lampate	*Duabanga grandiflora* (Roxb.Ex Dc.) Walp.	Lythraceae
21	Champ	*Michelia champaca* L.	Magnoliaceae
22	Bakaino	*Melia azedarach* L.	Meliaceae
23	Neem	*Azadirachta indica* A.Juss.	Meliaceae
24	Rubber plant	*Ficus elastica* L.	Moraceae
25	Pipal	*Ficus religiosa* L.	Moraceae
26	Bar	*Ficus benghalensis* L.	Moraceae
27	Timila	*Ficus auriculata* Lour	Moraceae
28	Kimbu	*Morus alba* L.	Moraceae
29	Kaphal	*Myrica esculenta* Buch.-Ham. Ex D. Don	Myricaceae
30	Seti Kath	*Myrsine capitellata* Wall.	Myrsinaceae
31	Jamun	*Sczygium cumini* L	Myrtaceae
32	Lakuri	*Fraxinus floribunda* Wall.	Oleaceae
33	Amala	*Phyllanthus emblica* L.	Phyllanthaceae
34	Pinus	*Pinus roxburgii* Sarg.	Pinaceae
35	Bamboo	*Bambusa nepalensis* Stapleton	Poaceae
36	Hade bayar	*Ziziphus incurva* Roxb.	Rhamnaceae
37	Mayal	Pyrus pashia Buch.-Ham.ex D.Don	Rosaceae
38	Paiyun	*Pyrus cerasoides* D.Don	Rosaceae
39	Chilaune	*Schima wallichii* DC. Korth	Theaceae
40	Jhingane	*Eurya acuminate* DC.	Thecaceae

Table 1:- tree species in HCF

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SN	Local names	Scientific names	Family
1	Asuro	*Justicia adhatoda* L.	Acanthaceae
2	Chutro	*Berberis asiatica* Griff.	Berberidaceae
3	Jamano mandro	*Mahonia nepalensis* DC.	Berberidaceae
4	Ader	*Ricinus communis* L.	Euphorbiaceae
5	Rudilo	*Pogostemon benghalensis* Burm. F. Kuntze	Lamiaceae
6	Dhaiyaro	*Woordfordia fruticosa L. Kurz*	Lythraceae
7	Seto chulesi	*Osbeckia nepalensis* L.	Melastomataceae
8	Kalochulesi	*Melastoma malabathricum* L.	Melastomataceae
9	Bilaune	*Maesa chisia* Wall. A. DC.	Myrsinaceae
10	Nigalo	*Arudinaria falcate* Nees.	Poaceae
11	Ghangaru	*Pyrancantha crenaluta* (D.Don.) M.Roem.	Rosaceae
12	Ainselu	*Rubus ellipticus* Smith	Rosaceae
13	Timur	*Xanthoxylum armatum*	Rutaceae
14	Dhaturo	*Solanum stramonium* L.	Solanaceae
15	Banphanda	*Lantana camara* L.	Verbenaceae
16	Nilkandha	*Duranta repens* L.	Verbenaceae

Table 2:- Shrub species in HCF

SN	Local names	Scientific names	Family
1	Lahare banmara	*Mikania micrantha* Kunth.	Asteraceae
2	Aakashbeli	*Cuscuta reflexa* Roxb.	Convolvulaceae
3		*Ipomea purpurea* L. Roth.	Convolvulaceae
4	Bankakari	*Coccinia grandis* (L.) Voigt.	Cucurbitaceae
5	Bantarul	*Dioscorea bulbifera* L.	Dioscoreaceae
6	Vyakur	*Dioscorea deltoidea* Wall ex Kunth.	Dioscoreaceae
7	Batulepate	*Stephania grandiflora* Hook. F.Thomas	Menispermaceae
8	Majitho	*Rubia manjith* Roxb.ex	Rubiaceae
9	Kukurdaino	*Smilax aspera* L.	Smilacaceae
10	Pani lahara	*Tetrastigma serrulatum* (Roxb.) Planch.	Vitaceae

Table 3:- Climber species in HCF

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SN	Local names	Scientific names	Family
1		*Rungea pectinata* (L.) Nees	Acanthaceae
2	Datiwan	*Achyranthes aspera* L.	Amaranthaceae
3		*Alternanthera sessilis (L.) R.Br.exDC.*	Amaranthaceae
4	Ghodtapre	*Centella asiatica* (L.) Urb.	Apiaceae
5	Sano ghodtapre	*Hydrocotyl nepalensis* Hook.	Apiaceae
6	Gandhe	*Ageratum conyzoides* L.	Asteraceae
7	Titepati	*Artemesia indica* Willd.	Asteraceae
8	Banmara	*Adenophora ageratina*	Asteraceae
9	Kuro	*Bidens pilosa* L.	Asteraceae
10	Buki phool.	*Gnaphalium* sp	Asteraceae
11		*Yongia japonica* (L.) DC.	Asteraceae
12		*Sonchus asper (L.) Hill*	Asteraceae
13		*Circium vulgare* (Savi) Ten.	Asteraceae
14	Bhringaraj	*Ecliptra prostrate* L.	Asteraceae
15		*Taraxacum officinale* (L.) Weber	Asteraceae
18	Bhade kuro	*Xanthium strumnium*	Asteraceae
16	Abijalo	*Drymaria diandra* Blume	Caryophyllaceae
17		*Stellaria media* (L.) Vill.	Caryophyllaceae
19	Mothe	*Cyperus rotundus* L.	Cyperaceae
20	Pyauli	*Trifolium repens* L.	Fabaceae
21	Chariamilo	*Oxalis corniculata* L.	Oxalidaceae
22	Isabgol	*Plantago erosa* Wall.	Plantaginaceae
23	Dubo	*Cynodon dactylon* (L.) Pers.	Poaceae
24	Ghode dubo	*Digittaria setigera* Roth ex R.&S.	Poaceae
25	Siru ghans	*Imperata cylindrical* (L.) Raeurch	Poaceae
26	Kans	*Saccharum spontaneum* L.	Poaceae
27	Amriso	*Thysanolaena maxima (Roxb.) o. Kuntze*	Poaceae
28	Pirre	*Persicaria hydropiper* L.	Polygonaceae
29	Halhale	*Rumex nepalensis* L.	Polygonaceae
30		*Ranunculus sceleratus* L.	Ranunculaceae
31	Bhuikafal	Duchesnea indica (Andrews) focke	Rosaceae
32	Kantakari	*Solanum acuicatissimum* Jarg	Solanaceae
33	Kaligedi	*Solanum nigrum* L.	Solanaceae
34	Sisnoo	*Urtica dioica* L.	Urticaceae

Table 4:- Herb species in HCF

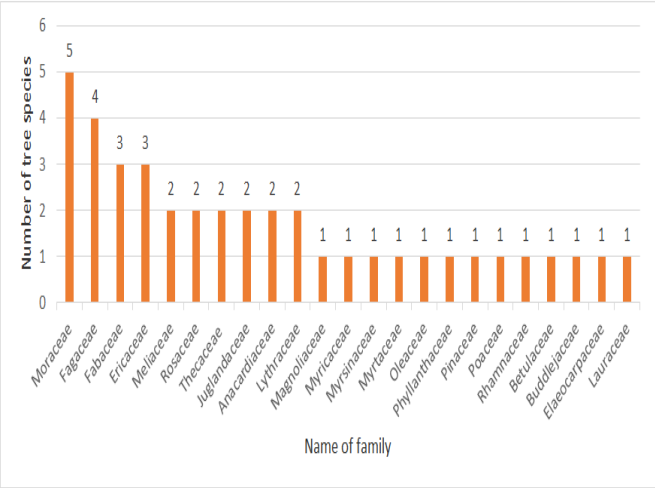

Fig 2:- Number of tree species in different family in HCF

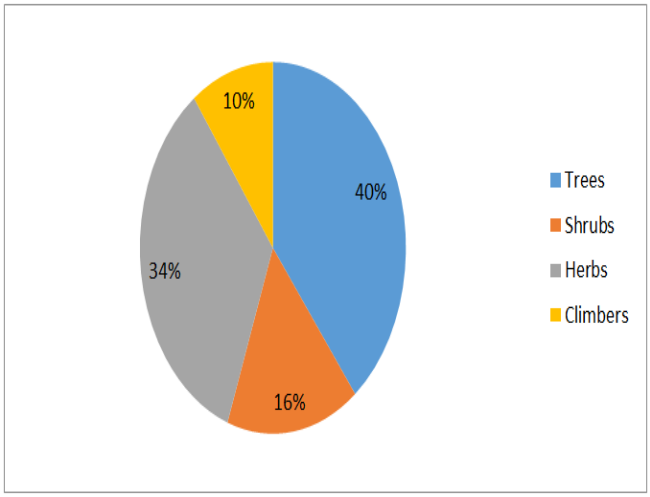

Fig 3:- Percentage of trees, shrubs, herbs and climbers

IV. CONCLUSION

HCF covers 55.4 hectors land area having 40 species of trees, 16 species of shrubs, 10 species of climbers and 34 species of herbs belonging to 92 genera and 48 families. This forest is dominated by important tree species such as *Myrica esculenta, Rhododendron arboreum, Schima wallichii* etc. Due to regular process of road construction and park construction in HCF area, some plants are in the risk of exploitation. So, it is necessary to keep regular documentation of plant species. This community forest user group should be aware to make policies for the conservation of plant species of the area.

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