

ASSESSMENT ON ENDANGERED PLANT BIODIVERSITY OF SHIRUI NATIONAL PARK, UKHRUL, MANIPUR

ABSTRACT

The study deals with the biodiversity and ethnobotany of Shirui National Park, Ukhrul, Manipur that was carried out in 5 different sites. A total of 9 plant species belonging to 6 families with 1607 individual were found. Quadrates sizes 10m x 10m of plant were used. In term of IVI Site 4 Showed the maximum parameter for IVI value of Plant Species which was represent by *Bidens pilosa* with the value of 130.7.

The Family *Passifloraceae*, *Phyllathaceae*, *Amaranthaceae*, *Anacardiaceae*, *Ranunculaceae*, *Taxaceae*, *Apiaceae*, *Plantaginaceae*, *Oxalidaceae* and *Elaeocarpaceae* were represented by only one species each and *Asteraceae* was found to be dominant with 2 species.

Keywords: Conservation, endangered, biodiversity, Ukhrul.

1. Introduction

Biological diversity refers to the variety and variability among living organisms and the ecological complexes in which they occur (**Pullaiah et al., 2015**). The extinction and species introduction are two major biodiversity crises of the current millennium. A species may become endangered and eventually extinct when death rate exceeds birth for a prolonged duration. Anthropogenic activities are now-a-days prominent and causing extinction of many plant species of ecological and economic significance (**Choudhury and Khan, 2010**).

Understanding of the dynamics of plant resources is important for their sustainable management, utilization and biodiversity conservation (**Sarkar and Devi, 2014**). Remote sensing data provides a perspective on how ecosystems and species are being affected by the multiple disturbances. Progress achieved for understanding essential biodiversity variables with reference to species populations, species traits, community composition, ecosystem function and ecosystem structure have been reviewed (**Reddy et al., 2017**).

Forest plants are gathered for food, herbal medicine, spices, fuel, etc, which have built up their socio economic and cultural life (**Wangcha and Konyak, 2021**). Tribals are the oldest ethnological groups which live far away from the civilized world. They prefer to live in forested areas, follow primitive customs and occupations, profess primitive religions, have common language and social culture, are economically dependent on each other. (**Sharma and Kumar, 2013**).

Majority of population in the developing countries like India depends on the traditional systems of medicine like Ayurveda for their primary healthcare needs. Increasing demand of medicinal plants leads to irrational cutting deforestation leading to depletion of the wild resources (**Kadam and Pawar, 2020**). The Use of medicinal plants by ancient people and inheritance of this

information from one generation to next have led to the study of relationship between humans and plants (**Thakur et al., 2020**).

Manipur (India) is a land of Blue Hills and green valley. It is in the extreme northeastern border of India. According to 2011 census the total population is 28,55,794 lakhs. Different communities having their own language and culture are residing in the state. But the main language in the state is Meitei language. Shirui lily is the state flower of Manipur and this flower is found only in Ukhrul district. The Government of Manipur organized a festival in the name of this state flower called “Shirui festival” as a state function from 2017 onwards. The main theme of the festival is to conserve the flower as well as unite together all the communities through cultural exchange programmed and enhances the tourism industry in the state. (**Devi et al., 2021**).

The forests are the main repository of biodiversity and play an important role in maintaining the ecological balance of nature. The status of species diversity reflects the health of the ecosystem. (**Waponungsanget al., 2021**)

2. Materials and methods

Shirui National Park, Ukhrul, Manipur within 24°13'51.0"N 94°13'51.0"E longitude and latitude at an elevation of 2,835 meters above sea level. Ukhrul district is sub-tropical monsoon type. The climate of the district is of temperate nature with minimum and maximum degrees of 3°C to 33°C. The average annual rainfall is 1,763.7mm.

For the study of the plant species, quadrat methods were used. The plants were measured and recorded by random sampling with 10 quadrats of 10m ×10m in each study site.

The objective of the study is to analyse the community structure for species richness, density and frequency. Important community parameters such as frequency, density, basal area and Importance Value Index (IVI) were calculated using standard methods given by **Misra (1968)** and **Muller-Dombois and Ellenberg (1974)**.

2.3 Map location of the study area

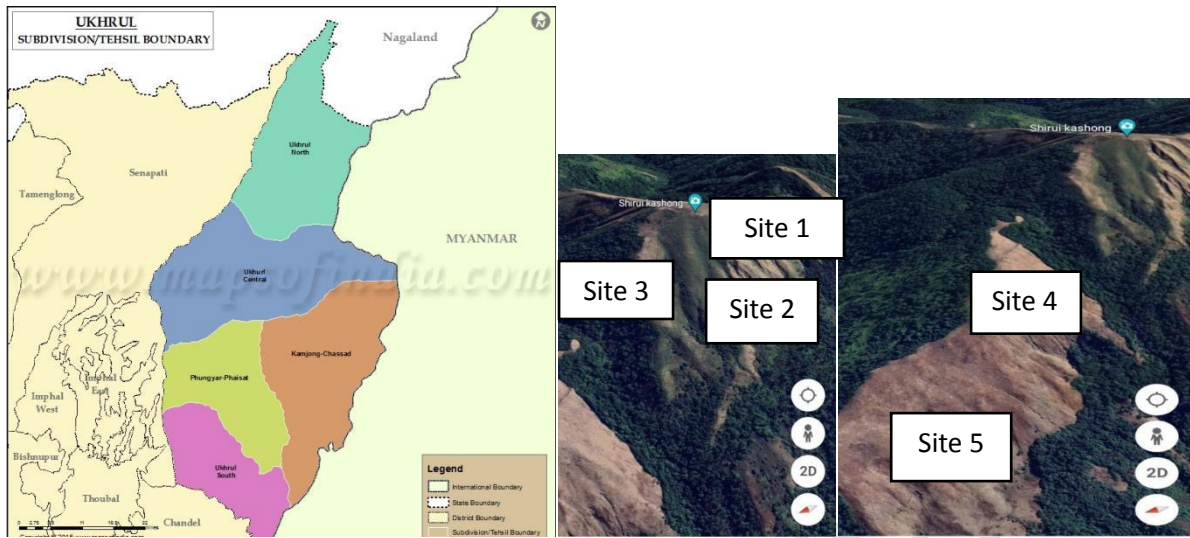


Fig 1:- Map of Ukhrul District and Shirui National Park

3. Results and discussion.

Table 1. Quantitative analysis (Site 1):-

Sl no.	Species	BA(cm ²)	F	D	A	RF	RD	RDo	IVI
1	<i>Curcuma rubescens</i>	0.04	85	4.5	5.3	22	26.7	24.7	73.6
2	<i>Dendrobium densiflorum</i>	0.15	70	2.4	3.5	18.1	13.9	15.8	48.2
3	<i>Dendrobium nobile</i>	0.16	70	2.3	3.5	17.1	13.6	16.3	46.8
4	<i>Rhododendron arboretum</i>	0.27	70	1.8	2.5	18.1	10.7	11.8	40.7
5	<i>Lilium Mackliniae</i>	0.02	90	6.1	6.4	23.3	35.5	31.2	90.5

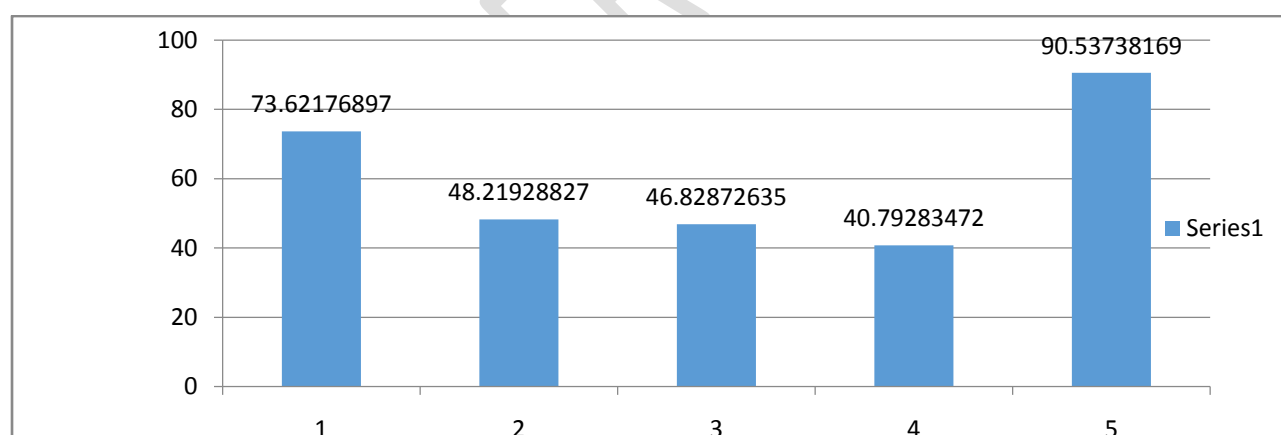


Fig 2. IVI Index(site 1)

Table 2. Quantitative analysis (Site 2):-

Sl no.	Species	BA(cm ²)	F	D	A	RF	RD	RDo	IVI
1	<i>Curcuma rubescens</i>	0.04	90	5.1	5.6	22.2	28.7	26	77.1
2	<i>Dendrobium densiflorum</i>	0.16	70	2.8	4.0	17.2	16.10	18.7	52.1

3	<i>Dendrobium nobile</i>	0.23	80	2.4	3.0	19.7	13.4	13.8	47.1
4	<i>Rhododendron arboretum</i>	0.50	85	2.5	3.0	20.9	14.0	13.8	49.2
5	<i>Lilium Mackliniae</i>	0.03	80	4.8	6	19.7	27.0	27.6	74.4

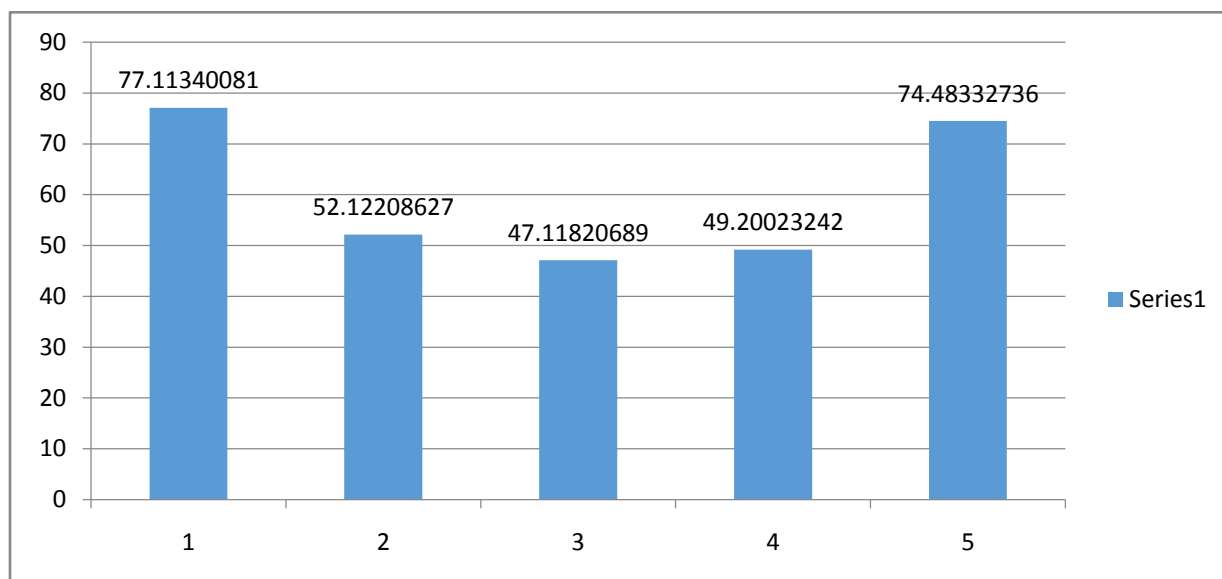


Fig 3. IVI Index(site 2)

Table 3. Quantitative analysis (Site 3):-

Sl no.	Species	BA(cm ²)	F	D	A	RF	RD	RDo	IVI
1	<i>Bidens pilosa</i>	0.001	100	7.9	7.9	28.9	40.0	35.3	104
2	<i>Plantago major</i>	0.005	85	4.2	5	24.6	21.0	22	68.04
3	<i>LiliumMackliniae</i>	0.006	80	3.7	4.6	23.1	18.7	20.7	62.7
	<i>Plantago erosa</i>	0.005	80	3.9	4.9	23.1	19.7	21.8	64.8

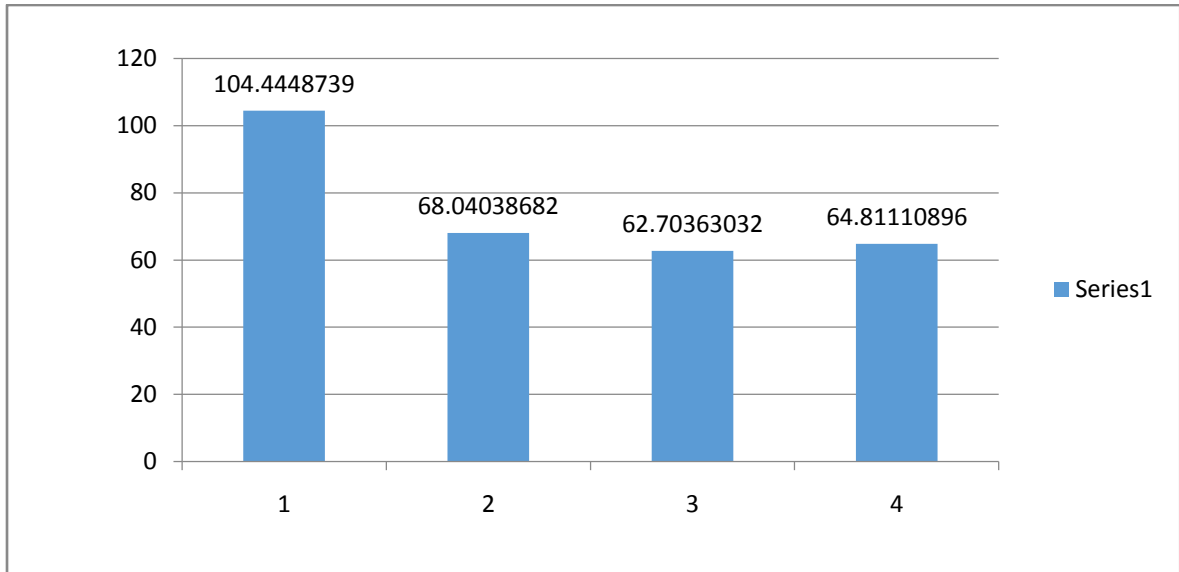


Fig 4. IVI Index(site 3)

Table 4. Quantitative analysis (Site 4) :-

Sl no.	Species	BA(cm ²)	F	D	A	RF	RD	RDo	IVI
1	<i>Bidens pilosa</i>	0.001	150	4.6	5.1	51.7	48.9	42.66	130.7
2	<i>Plantago major</i>	0.006	75	2.5	3.3	25.8	26.5	27.5	86.44
3	<i>Lilium mackliniae</i>	0.005	65	2.3	3.6	22.4	24.4	29.8	82.85

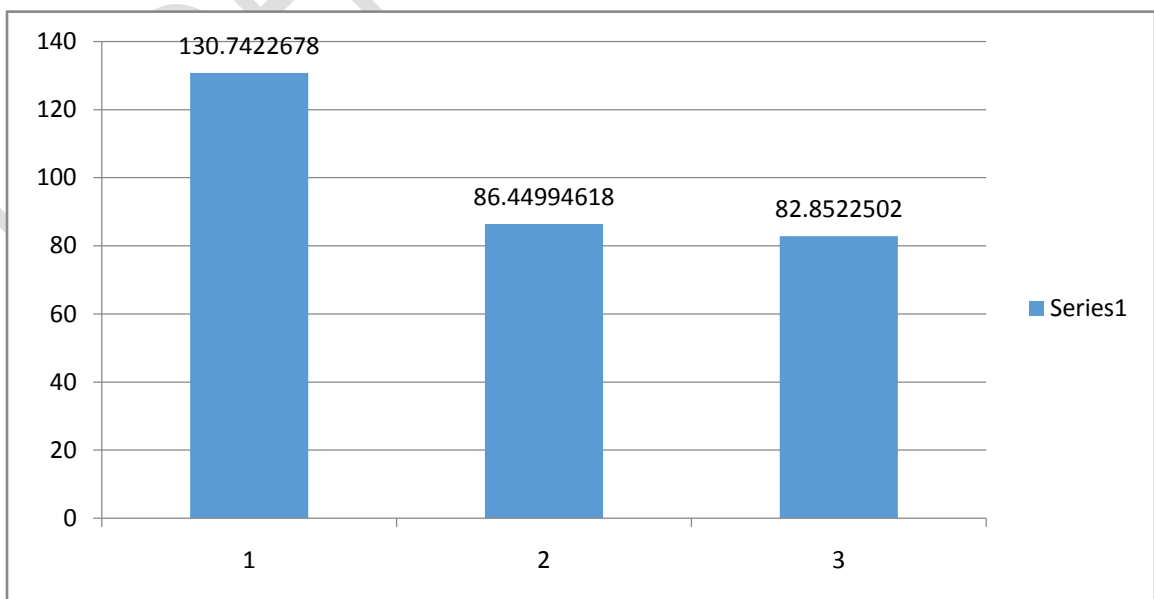


Fig 5. IVI Index(site 4)

Table 5. Quantitative analysis (Site 5):-

Sl no.	Species	BA(cm ²)	F	D	A	RF	RD	RDo	IVI
1	<i>Eupatorium</i> <i>Adenophorim</i>	0.01	90	3.8	4.2	18.5	23.8	22.8	65.34
2	<i>Lilium</i> <i>Mackliniae</i>	0.03	45	0.8	1.8	9.2	5.0	10.06	24.6
3	<i>Plantago</i> <i>Major</i>	0.50	80	1.6	2.0	16.5	9.9	10.66	37.12
4	<i>Bidens</i> <i>Pilosa</i>	0.19	90	1.8	2.0	18.5	11	10.66	40.43
5	<i>Artemisia</i> <i>Nilagirica</i>	0.63	95	6.1	6.4	19.5	38	34.5	92.4
6	<i>Rhododendron</i> <i>Arboretum</i>	0.23	85	1.8	2.1	17.5	11	11	40.03

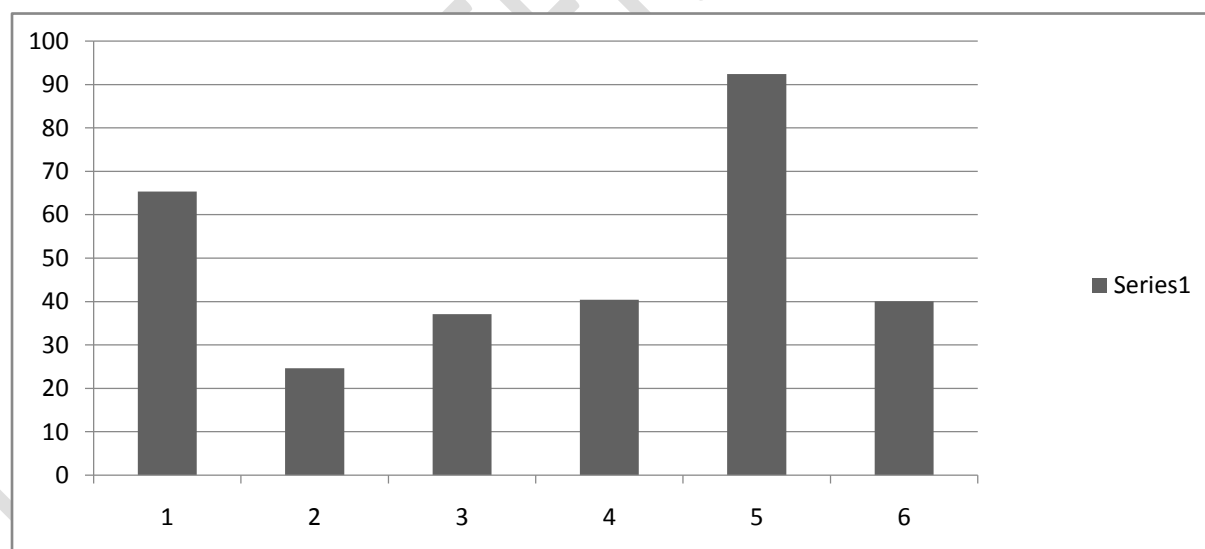


Fig 6. IVI Index(site 5)

The Shirui National park is sub-alpine region blessed with high diversity of flora, the National park is divided into two core; outer core and the inner core. The outer core area is a dense forest cover area whereas the main or inner core area are mostly of grassland, where the *Lilium Mackliniae* which grow during the month of March to June, the state flower of Manipur is endemic to Shirui National Park, Ukhrul, Manipur. Annually, during the month of January the villagers torch the main core area of grassland in order to get minimize the other competitive species of *Lilium Mackliniae*, and help in conserving the species in a traditional way. On the other hand many species were lost.

The site was selected from the five different area of inner core area, For **site 1** based on the IVI value of table the most dominant plant species was found out to be *Lilium mackliniae*(90.5). For **site 2** based on the IVI value the most dominant plant species was out found to be *Curcuma rubescens*(77.1). For **site 3** based on the IVI value the most dominant plant species was out found to be *Bidens pilosa* (104). For **site 4** Based on the IVI value the most dominant plant species was out found to be *Plantago Major*(130.7). For **site 5** based on the IVI value the most dominant plant species was found out to be *Artemisia Nilagirica*(92.4) .

Conclusion

From the present research work it can be conclude the plant species in **Site 4** of Shirui National park showed the maximum parameter for IVI value of Plant Species which was represent by *Bidens pilosa* with the value of **130.7**, whereas **Site 5** Showed the minimum parameter for IVI value of Plant Species which was represent by *LiliumMackliniae* with the value of **24**, which indicates the declining population status of the species which is only endemic to Shirui National Park, Ukhrul, Manipur.

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