Kansai Basin Flora at Lalgarh of Binpur-I Community Development Block in Jhargram Sub-Divison of Paschim Medinipur District in West Bengal, India

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Abstract- *Present study reflects 66 plant species under 65 genera and 32 families in which number of monocot families recorded was 4 and dicot families was 28. All the plant species were available during post monsoon to post summer with a short phenological character. The varied successional change altered the morphology of species which is due to varied eco-climatic conditions that persist for a short span. The herbaceous plants became ephemeral due to short span of time to complete life cycle which was actually fascinating one even far different with the same species available in other ecologically defined stations with different microclimatic conditions. It showed typical ecological behaviour that might be the key factor for other researches like soil microbiology of rhizosphere including phyllospheric interactions of other micro-organisms. Here, the ratio of monocot to dicot plant species observed was 1:5.6 during preliminary study.*

Keywords- Lalgarh-Kansai Basin-Flora-Succession

I. INTRODUCTION

Flora is a composition of plant species in a particular ecosystem and plays a key role to govern the ecological niche and utmost develop community. Population is a general term that emphasised on a particular plant which needs to incorporate the study of ecosystem with a varied floral morphology and strength of numerical study. The present study broadcasts basin flora of Kansai at Lalgarh of Paschim Medinipur District, nay forthcoming Jhargram District of the state West Bengal. In a common sense the floral elements are not static due to enforcement of power through nutrient flow and other stress time to time. As the river is floating and the water current is maximum during monsoon so that the basin and bank elements change their composition time to time under fragile ecosystem. This lead to change of species composition and ultimately change the community structure which make non-climatic climax. Waste and degraded stands nearer to the bank was so fragile that could be a vacant land which having minimal phyllospheric microflora even waiting to vanish as there are less interaction of soil and root system of plants. Some anthropogenic threat posed to loss of vegetation and soil erosion is another factor that governs the havoc change hitherto to change the dynamics of vegetation. As a whole, the continuous changing habitats changing the composition from time to time also from season to season. It is because some plants become submerged or completely merged during complete flow of water during monsoon, so no vegetation was there in the deepest river basin during monsoon to late monsoon. The only late monsoon and winter broadcasts typical vegetation mainly herbs along the moist bank of the river Knasai (Kansawati). Summer and pre monsoon change the vegetation which having maximum phonological change due to stress prone condition. The plants get flowers, fruits and set seeds as early as possible to withstand there. The other parts of the river sites e.g. high ridge river bank are very dry with no herbs during monsoon to late summer except a few thorny plants and other succulent, very few shrubs along with some woody climbers. The interesting episode is that the centre of the river basin showing rice cultivation during winter to early summer when the river having minimal water flow. Therefore, it is urged that more and more studies on vegetation in and around Lalgarh river basin may be conducted for critical analysis of vegetation and onset of floral composition in compare to the other study area. Remembering the concept the present study was conducted to know the floral composition and change of the succession on a seasonal basis.

II. STUDY AREA

Study area falls under Binpur-I community development block of Jhargram sub-Division in Paschim Medinipur District which will come very soon under Jhargram District of West Bengal State in India. It is a lower tract of Chotanagpur plateau with lateritic red soil along with alluvial substances in a high and low ridge stratum. The tract is Lalgarh area along the Basin of Kansai River that flows towards Dherua of Paschim Medinipur. The bank has river plateau having shrubberies, waste land, fallow land and

undulated degraded land with high erosive soil profile. Significant loss of soil is due to flow of water during heavy monsoon and lower drainage system flow the heavy mass of soil through mullah and gulley. Another cause is collection of sand from the river which could be a means for change of water flow and could be a force to change the abrupt loss of soil and landslides during heavy rain. The high ridge, middle most part of the bank and flat basin above the water flow line were considered to survey of floral composition during post monsoon and summer followed by winter.

III. MATERIALS AND METHODS

Study was conducted in the riverbank and basin of Kansai at Lalgarh with a programme scheduled for study of taxonomic evaluation. The period was taken when the river had very thin stream that happened a luxuriant growth of vegetation along the bank of downstream of river. The period was post monsoon, winter and summer with a significantly lowered temperature i.e. 9-10 degree centigrade during Januray and 26-28 during October. The degree of variation during the study period ranged between 9-28 degree centigrade with varied moisture content in both the waste land available at high ridge of the river bank and low lying moist community nearer to flow of water at the bottom of the river. Moisture content ranged between 7 and 14% at bank soil and sandy soil of the moist community. Rainy days during winter ranged between 8-11 days with scattered precipitation of water droplets. Regular visit have been made in the study sites along with the students of Botany Department of Lalgarh Government College, Lalgarh, Paschim Medinipur, West Bengal. Photographs were taken from field. Plant specimens were collected time to time to analyse the material in Ecology Laboratory of Botany Department, Lalgarh Govt. College. Soil was carried out to know the moisture content study. Temperature metre was used to study the temperature. Lux meter was used to record the intensity of light. Flora and monographs along with the literature was consulted to identify the plants. Herbarium specimens was prepared and housed in the laboratory of Lalgarh Govt. College for further study. Phenological studies were continued since post monsoon of the previous year till date. Literatures consulted 1-36 for up to date data collection, herbarium specimen preparation and collection of ecological parameters to complete the research.

IV. RESULTS AND DISCUSSION

The present paper reflects a total 66 plant species under 65 genera and 32 families in which 10 species was recorded under 4 families of monocotyledons and 56 species under 28 families of dicotyledons. The ratio of monocot to dicot species was 1:5.6 (Table 1). Here, highest frequency of species was encountered in case of families like Asteraceae (6) and poaceae (5) followed by Lamiaceae (4). Lowest frequency i.e. lowest number encountered in families like Acanthaceae, Alangiaceae, Amaranthaceae, Asclepiadaceae, Capparaceae, Combretaceae, Cucurbitaceae, Ehretiaceae, Martyniaceae, Meliaceae, Onagraceae, Rutaceae, Scrophulariaceae, Solanaceae and Ulmaceae. Some plant species were very important because they provide economically significant yield as timber, fruits, flowers and medicine. Except a few one other species available round the year though no typical phonological change. Moderately growing shrubby plants are common that have a crucial role to protect land though the growth is more or less slow. Other herbaceous vegetation found there with no significant phonological characters as the plants become dead but the lower part become alive.

Table 1. Floral elements available at Kansai basin during Post monsoon to Summer

Scientific Name	**English Name**	**Bengali Name**	**Family**
Alangium salvifolium (L. f.) Wangerin	Sage-leaved alangium	Ankar/Ans phal	Alangiaceae
Alternanthera sessilis (L.) R. Br. ex DC.	Sessile Joy weed	Ghoragima/Matikunduri	Amaranthaceae
Anisomeles ovata W. T. Aiton =A. indica (L.) Kuntze.	Catmint	Gopali/Gobru	Lamiaceae/Labiatae
Azadirachta indica A. Juss.	Margosa tree	Neem/Nim	Meliaceae
Blumea oxyodonta DC.	-	Kukshima	Asteraceae
Borassus flabellifer L.	Asian Palmyra Palm/Toddy Palm	Tal	Arecaceaea/ Palmae

Caesalpinia bonducella (L.) Fleming =C. bonduc (L.) Roxb.	Nickernut/ Fever Nut/Physic Nut	Nata	Caesalpiniaceae
Mimosa rubicaulis Lam.	-	Chirchit kanta	Caesalpiniaceae
Calotropis gigantean (L.) Ait.	Madar/Swallow wort	Akanda	Asclepiadaceae
Capparis sepiaria L.	Caper bush	Kaliakra	Capparaceae
Cassia tora L.	Sickle Pod/Sickle Senna	Jhunjhuni	Caesalpiniaceae
Chrysopogon aciculatus (Retz.) Trin.	Mackie's pest/ Lesser Spear grass	Chorkanta	Poaceae
Cleome viscosa L.	Yellow spider flower	Hurhura/Hurhuria	Capparaceae
Clerodendrum viscosum Vent.	Clerodendrum	Ghetu/Glory tree	Verbenaceae
Coccinia grandis (L.) Voigt.	Ivy gourd/ Scarlet gourd	Tite Kundri	Cucurbitaceae
Cocculus hirsutus (L.) Diels	Broom Creeper	Dadaya/Huyer	Menispermaceae
Coldenia procumbens L.	-	Tripunkhi	Ehretiaceae/ Boraginaceae
Combretum decandrum Jacq.	-	Atang	Combretaceae
Commelina diffusa Burm. f.	Climbing day flower/Spreading day flower	Kanchira	Commelinaceae
Crotalaria palida Aiton.	Rattlebox plant/Smooth crotalaria/Smooth Rattlebox	Jhunjhuni	Fabaceae
Croton bonplandianum Baill.	Bonpland's Croton	Ban Tulsi	Euphorbiaceae
Cynodon dactylon (L.) Pers.	Bermuda grass	Durba/Duba	Poaceae
Cyperus rotundus L.	Nutgrass/Nut sedge	Mutha	Cyperaceae
Dentella repens (L.) J.R.Forst & G. Forst	Creeping lick stoop	Bhumipat phool	Rubiaceae
Desmodium triflorum (L.) DC.	Three flower beggarweed/ Creeping tick trefoil	Kudaliya	Fabaceae
Dicliptera bupleuroides Nees	-	Lal Jhanti/lal sira	Acanthaceae
Eclipta prostrate L. =E. alba (L.) Hassk.	False daisy	Kesut/Kesta	Asteraceae
Eragrostis tenella (A.Rich.) Hochst. ex Steud	Love Grass/Feather love grass	-	Poaceae
Eupatorium odoratum L. =Chromolaena odorata (L.) R.M. King. & H. Rob.	Christ mas bush/ Common flosh flower/Siam weed/jack in the bush	Ban karpur/Kaslimasala/ Sial muti/Banmara	Asteraceae
Evolvulus	Agracejo/Rastrero	Bhnui-Akra	Convolvulaceae

nummularius (L.) L.			
Ficus benghalensis L.	Banyan tree	Bot	Moraceae
Glinus oppositifolius (L.) Aug. DC.	Bitter cumin, Indian chic weed, bitter leaf	Gima Shak	Molluginaceae
Haldina cordifolia (Roxb.) Rids. =Adina cordifolia (Roxb.) Benth. & Hook. f. ex B. D. Jacks.	Heart leaf Adina	Karam	Rubiaceae
Helichrysum luteoalbum (L.) Rehb. =Gnephalium luteoalbum L.	Jersey Cudweed/ Weedy Cudweed	Scora	Asteraceae
Holoptelea integrifolia (Roxb.) Planch	Jungle cork wood tree	Nata karanja/Challa	Ulmaceae
Hyptis suaveolens (L.) Poit.	Bush tea-bush	Bilati tulsi	Lamiaceae
Ipomoea carnea Jacq. Ssp. Fistulosa (Mart. Ex Choisy) D. Austin	Bush Morning Glory/Pink Morning Glory	Uridam/Jhoradan/ Ha-Kalmi	Convolvulaceae
Jatropha gossypifolia L.	Black physic nut/ Bellyache bush/ Cotton-leaf physicnut	Bharenda	Euphorbiaceae
Kylinga brevifolia Rottb.	Green head sedge/Short leaf spike sedge	Nirbis	Cyperaceae
Lantana camara L.	Yellow sage	Kutus	Lamiaceae
Limonia acidissima L. =Feronia elephantum =F. limonia	Elephant-apple	Kothbel/Kaith	Rutaceae
Lippia geminate Kunth	Bushy Matgrass/Pitiona	Motmotia ful	Verbenaceae
Ludwigia perennis L.	Cyllindric fruit primrose-willow	Jal labanga/Ban labanga	Onagraceae
Martynia annua L.	Tiger's Claw	Baghnokh	Martyniaceae /Pedaliaceae
Mecardonia procumbens (Mill.) Small	Baby jump-up	Garur bramhi	Scrophulariacea e
Morinda angustifolia Roxb.	Narrow leaved Indian Mulberry	Daruharidra	Rubiaceae
Ocimum americanum L.	Hoary basil	Ban tulsi	Lamiaceae/ Labiatae
Oldenlandia corymbosa L.		Khet-papra	Rubiaceae
Oryza sativa L.	Asian Rice	Dhan	Poaceae
Phoenix sylvestris L.	Date Palm	Khejur	Arecaceae
Phyllanthus simplex Retz.		Bhumiamla/ Bhuavala	Euphorbiaceae
Physalis minima L.	Native gooseberry	Bon Taperi ful	Solanaceae

Pithecellobium dulce (Roxb.) Willd.	Manila Tamarind	Jilapi/Jalebi	Mimosaceae
Polygonum hydropiper L.	Water Pepper	Packurmul/Jallanka	Polygonaceae
Rumex acetocella L.	Sheep's sorrel/Red sorrel	Ban-Palang	Polygonaceae
Saccharum spontaneum L.	Serio grass	Kans ghas	Poaceae/ Graminae
Scoparia dulcis L.	Sweet broom	Chini-pata	Scrophulariaceae
Solanum xanthocarpum Schard & Wendl.	Yellow berried Night shade	Kantikarii	Solanaceae
Spermacoce hispida L.	False button weed	Madanghati	Rubiaceae
Stereblus asper Lour.	Sand Paper tree	Seora	Moraceae
Tephrosia purpurea (L.) Pers.	Wild Indigo	Ban Nil/Lahamori /Sarpunkha	Fabaceae
Tiliacora acuminata (Lam.) Hook. f. & Thoms.	Teliakoara	Teli lata	Menispermaceae
Tragia hispida Willd.	Stinging Neetle	Bichuti	Euphorbiaceae
Tridax procumbens L.	Tridax daisy/Coat buttons	Tridaksha	Asteraceae/ Compositae
Vachelia nilotica (L.) P. J. H. Hurter & Mabb. =Acacia nilotica (L.) Willd. ex. Dellile =A. Arabica (Lam.) Willd.	Gum Arabica/ Prickly Acacia	Babla/Babul	Mimosaceae
Vernonia cinerera (L.) Less.	Little iron weed, Purple fleabane, Ash coloured fleabane	Kala-jhira/Sahadevi	Asteraceae
Ziziphus oenoplea (L.) Miller	Jackal jujube/ Wild Jujuba	Kankul	Rhamnaceae
Ziziphus sp.	Shrubby Boir	Pal Kul	Rhamnaceae

PHOTOPLATES 1-3 (Fig.1-28)

Fig. 1 Kansai basin at Lalgarh showing thin flow of water during January with cold but dry weather

Fig. 2 Author and College Student during field trip

Fig. 3 Students during survey at Kansai basin

Fig. 4 Eclipta sp.

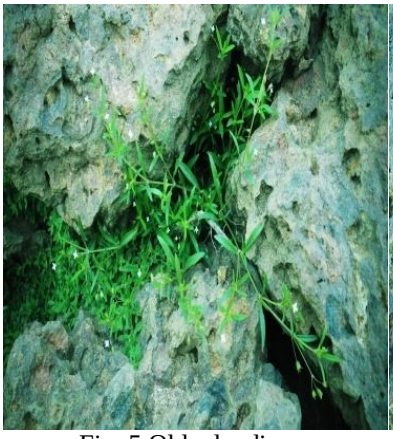


Fig. 5 Oldenlandia sp.

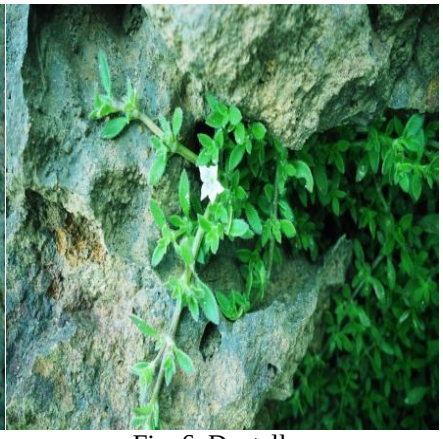


Fig. 6 Dentella sp.

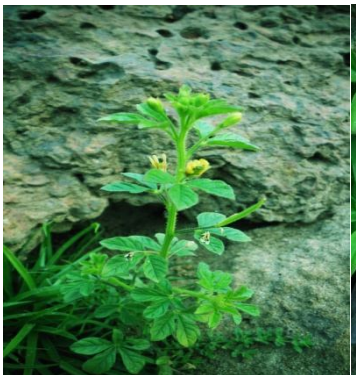


Fig. 7 Cleome sp.

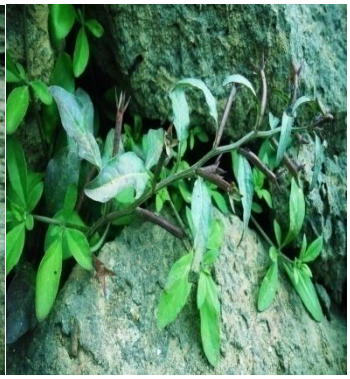


Fig. 8 Ludwigia sp.


Fig. 9 Commelina sp.

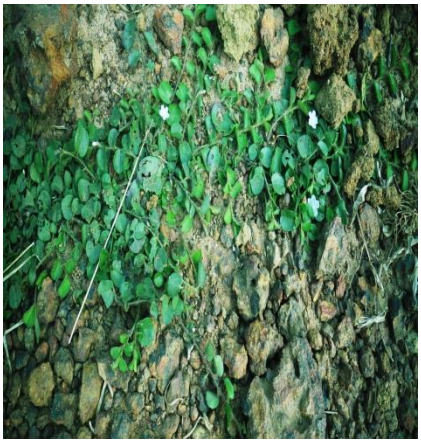


Fig. 10 Evolvulus sp.

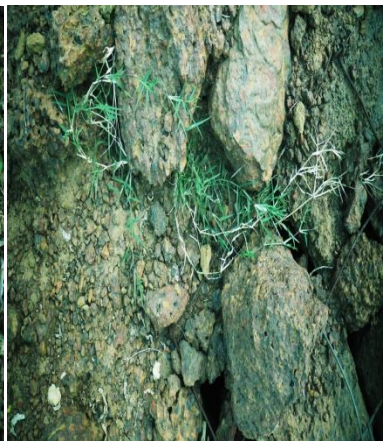


Fig. 11 Cynodon sp.

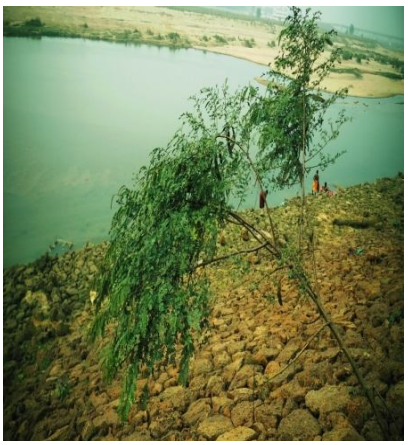


Fig. 12 Caesalpinia sp.


Fig. 13 Calotropis sp.

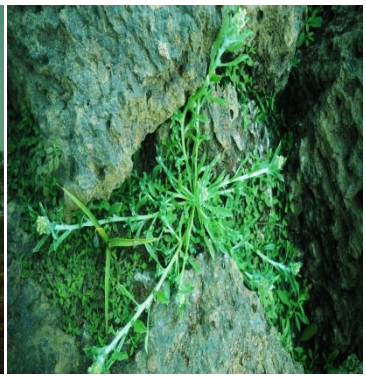


Fig. 14 Gnaphalium sp.


Fig. 15 Rumex sp.


Fig. 16 Glenus sp.


Fig. 17 Scoparia sp.

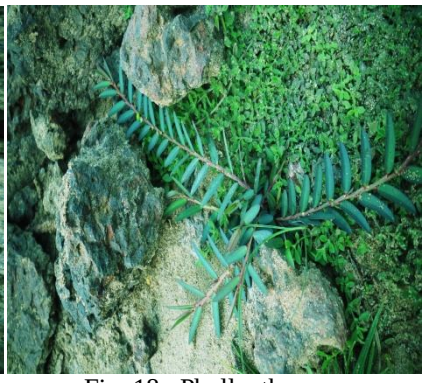


Fig. 18 Phyllanthus sp.

Fig 19 Morinda sp.

Fig. 20 Tridax sp.

Fig. 21 Alangium sp.

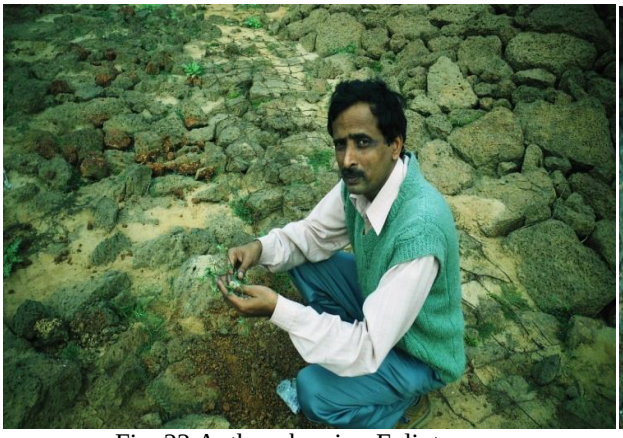


Fig. 22 Author showing Eclipta sp.

Fig. 23 Physalis sp.

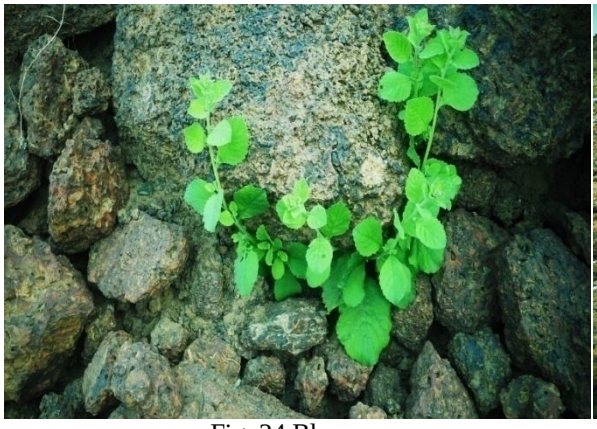


Fig. 24 Blumea sp.

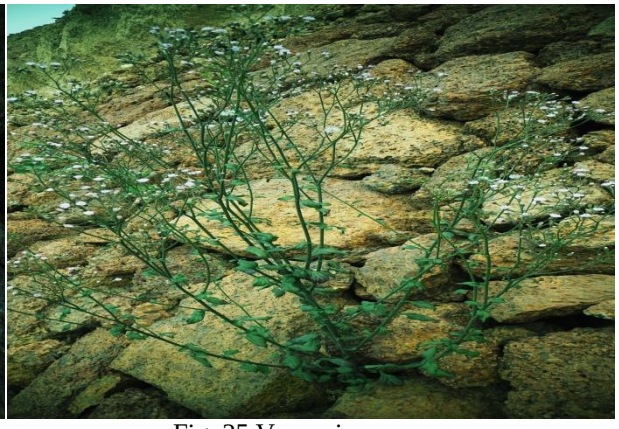


Fig. 25 Vernonia sp.

Fig. 26 Polygonum sp.

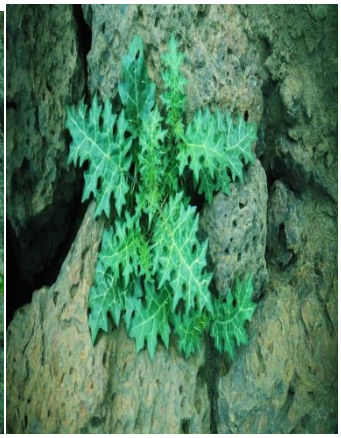
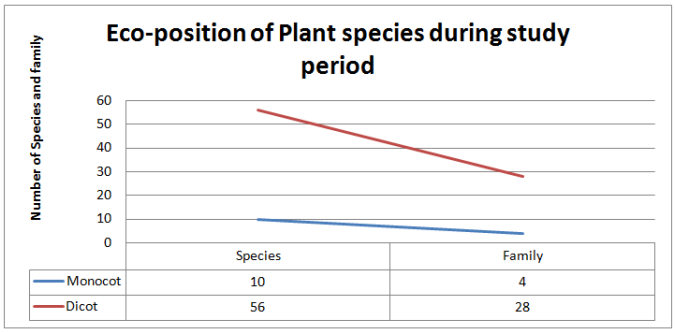


Fig. 27 Solanum sp.

Fig. 28 Alternanthera sp.

V. CONCLUSION

In the study highest species number was observed in case of family Asteraceae (6) under dicot where as lowest number of species was encountered in case of family Poaceae (5) under monocot. Total species of monocot encountered was 10 under 4 families where as under 28 families of dicot 56 species was listed in the study site (Graph 1). Here herbs nearer to flow line of water showed optimum growth though other high ridge site showed dry vegetation as the soil became dry during hot monsoon followed by summer.



Graph 1 Position of species under monocot and dicot families at Kansai basin of Lalgarh

Basin flora is interesting because the life span of all the plant species showed a varied phonological change with the change of climate. Therefore, bank flora and their study could be a research area for taxonomist, microbiologist, environmentalists as well as ecological researcher. The record and interpretation may be a general guideline to the beginners and amateur field worker in the field of Botany, Zoology, and Environmental Study. Nature lover and field researchers will use the data as record one for future use. The land planner and policy maker will use the habitat as the habitat is facing though fragile in connection with degradation. Pollution and human pressure will change the land pattern and use value so to revive the pristine a holocentric approach may be incorporated to protect the site in near future.

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