International Journal of Botany Studies
www.botanyjournals.com
ISSN: 2455-541X
Received: 02-12-2023, Accepted: 18-12-2023, Published: 03-01-2024
Volume 9, Issue 1, 2024, Page No. 6-7

Study of Phenological stages of riparian plant species of Karban River, Iglas (Aligarh) in winter season

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Abstract
Riparian regions are ecotones between a aquatic and terrestrial landscapes. In the present study Phenology and life form of riparian plant species of Karban river at Iglas (Aligarh) U.P. were studied. A total of 61 plant species were found on the study site. Therophyte plant species were found maximum in number while phenerophytes plant species were minimum in number. In winter season maximumplant species were found in germination and vegetative phase

Keywords: Riparian, phenology, Therophytes, phenerophytes

Introduction
Riparian region is the area where land and water bodies interact. Riparian regions are rich in diversity of flora, fauna and environmental processes [6]. High biodiversity of riparian regions is due to high diversity of habitats and small scale climate variations [4]. Many factors such as soil properties, depth of water table, soil moisture influence composition of riparian plan communities. Natural and anthropogenic disturbances [2] are responsible for riparian zone degradation. Uncontrolled exploitation of riparian ecosystem by human, discharge of industrial waste [5] affects the riparian species. Function of riparian region decline when the number of species decline.
The objective of present study were life form and phenological study of riparian flora.

Material and method
The study site was Karvan river at Iglas Aligarh U.P. Two different sites 1. Disturbed land (site 1) and 2. Undisturbed land (siteII) were selected for study. Plant species were enlisted weekly in winter season from October to December for phenological study and life forms. Phenological events (germination, vegetative phase, flowering, fruiting, dispersal of seeds and death) were recorded. Vegetative analysis was done by Raunkiaer's method [7] and identification of plant species were done by the help of different floras as by Duthie [3] and Bor [1]

Result and Discussion
At both study site 61 plant species were recorded in winter season for phenological study and life form. These 60 plant species belong to 29 families. The proportion of plant species fall under therophytes was maximum in number while proportion of plant species fall under phenerophyte was found minimum. In another study by Sharma and Sharma [8] along hill stream the number of therophytes were recorded highest while number of geophytes were least. Most of the observed plant species were found in germination and vegetative phase.

Table 1: Dimension of the study site

Site and size	zones	Distance from minimum water level	Slopes
I(100x5)	Lower zone	0-2	25^0C-35^0C
	Higher zone	2-12	50^0c-55^0c
II(100x5)	Lower zone	0-3	20^0C-25^0C
	Higher zone	4-12	35^0C-40^0C

Table 2: Life forms and phenology of te plant species common on both the sites I&II

Germination	Ph- Phanerophytes
Vegetative Phase	Ch-Chamaephytes
Flowering	H-Hemicryptophytes
Fruiting	G-Geophytes & Cryptophytes
Mature Seeds	Th- Therophytes
Death of the Plant	

Table 3

Abutiliongraveolens W&A	Malvaceae	Ch	1,2	1,2	2,3
Acacianilotica (Linn.)Del.	Fabaceae	Ph	1,2	1,2	1,2
*Achyranthesaspra*Linn.	Amaranthaceae	H	1,2	1,2	2,3
*Acalyphaindica*Linn.	Euphorbiaceae	H	1,2	1,2	2
*Ageratumconyzoides*Linn.	Asteraceae	Ch	1,2	1,2	1,2,3
*Alternantherasessile*R.Br.	Amarathaceae	Th	1,2	1,2,3	2,3,4
*Amaranthusviridis*Linn.	Amaranthaceae	Ch	2	2,3	2,3
*Anagalisarvensis*Linn.	Primulaceae	Th	-	1	1,2
*Argemonmaxicana*Linn.	Papaveraceae	Th			
*Boerhaaviadiffusa*Linn.	Nyctaginaceae	Ch	1,2	1,2,3	1,2,3
*Brassicacompestris*Linn.	Brassicaceae	Th	-	-	1,2
Cajanuscajan (Linn.)Mill.	Fabaceae	Th	-	-	1,2
*Calotropisprocera*R. Br.	Apocynaceae	Ch	1,2	1,2	1,2

*Cannabissativa*Linn.	Cannabaceae	H	1,2	1,2	2
*Cassiaoccidentalis*Linn.	Fabaceae	Th	1,2	2	2,3
*Chenopodiummurale*Linn.	Chenopodiaceae	H	1,2	1,2,3	2,3,4
*Cocciniaindia*W.&A.	Cucurbitaceae	Th	1,2	1,2	2,3
*Commelinabenghalensis*Linn.	Commelinaceae	H	1,2	1,2	2
*Convolvuluspluricaulis*Chois.	Convolvulaceae	H	-	1,2	1,2
*Corchorustricularis*Linn.	Tiliaceae	Th	1,2	1,2,3	2,3
*Crotonbonplandianum*Linn.	Euphorbiaceae	Ch	1,2,3	1,2,3	2,3,4
Cynodondactylon(Linn.)Pers.	Poaceae	G	2,3	2,3	2,3,4
*Cyperusrotundus*Linn.	Cyperaceae	G	1,2	2,3	2,3,4
Dactylocteniumaegyptium (Linn.)P.Beauv.	Poaceae	G	1,2	1,2,3	2,3,4
*Dalbergiasisso*Roxb.	Fabaceae	Ph	2,4	2,4	2,4
*Daturaalba*Nees.	Solanaceae	Ch	1,2	2,3	2,3,4
Dichanthiumannulatum (Forssk.)stapf	Poaceae	G	1,2	1,2,3	2,3,4
*Digeraarvensis*Forsk.	Amaranthaceae	Th	1,2	1,2,3	2,3,4
Digitariaciliaris(Retz.)Koel.	Poaceae	G	1,2,3	1,2,3	2,3,4
*Ecliptaalba*Hassk.	Asteraceae	Ch	1,2,3	1,2,3	2,3,4
*Euphorbiahirta(*Linn.)	Euphorbiaceae	H	2,3,4	2,3,4	2,3,4
*Fumariaparviflora*Lamk.	Fumariaceae	Th	1,2	2,3,4	2,3,4
*Gomphrenacelosioides*mart.	Amaranthaceae	Ch	1,2,3	1,2,3	2,3,4
*Heliotropiumovalifolium*Forsk.	Boraginaceae	Th	2,3,4	2,3,4	3,4,5
*Ipomoiafistulosa*Mart.Exchoisy	Convolvulaceae	Ch	2	2	2
*Lantanacamara*Linn.	Verbenaceae	Ph	2,3,4	2,3,4	2,3,4
Malvastrum tricuspidatum A. Gray.	Malvaceae	Th	1,2	2	2,3
*Nicotianaplumbaginifolia*Viv.	Solanaceae	H	1,2	1,2	2,3
*Ocimumcanum*Sims.	Labiatae	Th	-	-	2,3
*Oxaliscorniculata*Linn.	Oxalidaceae	H	2,3,4	2,3,4	2,3,4
*Partheniumhysterophorus*Linn.	Asteraceae	Ch	2,3,4	2,3,4	2,3,4
*Paspalumscrobiculatum*Linn.	Poaceae	G	2	2,3	2,3,4
Peristrophebicalyculata	Acanthaceae	Th	2	2	2
*Phyllanthusniruri*Linn.	Phyllanthaceae	Th	1,2	2,3,4	2,3,4
*Polygonumglabrum*Willd.	Polygonaceae	Ch	2	2	2,3
*Pongamiaglabra*Vent.	Fabaceae	Ph	2	2	2,3
*Ricinuscommunis*Linn.	Euphobiaceae	Ph	2	2	2
*Saccharumbenhalensis*Linn.	Poaceae	Ch	2	2	2,3
*Saccharumspontaneum*Linn.	Poaceae	Ch	2	2,3	2,3,4
*Setariagluaca*Linn.	Poaceae	G	1,2	1,2,3	2,3,4
*Sidaaccuta*Linn.	Malvaceae	H	1,2	1,2,3	2,3,4
*Solanumnigrum*Linn	Solanaceae	H	1,2	1,2,3	2,3
Steliariamedia (L.)Vill.	Caryophyllaceae	Th	-	1,2	2,3
*Tribulusterrestris*Linn.	Zygophyllaceae	Th	-	-	1
*Tridaxprocumbens*Linn.	Asteraceae	H	1,2	1,2,3	2,3,4
*Triticumaestivum*Linn.	Poaceae	Th	-	-	1,2
*Triumfettarhomboidea*Jacq.	Malvaceae	H	1,2	1,2,3	2,3,4
Withania somnifera (Linn.) Dunal	Solanaceae	H	-	1	1,2
*Xanthiumstrumarium*Linn.	Asteraceae	Ch	1,2	2,3,4	2,3,4
Zizyphusnummularia(Burh.f) W.&A.	Rhamhaceae	Ph	2	2	2

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