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Study of Phenological Stages of Riparian Plant Species of Karban River, Iglas (Aligarh) in Rainy Season

Preeti Sharma[1], Dr. Prabodh Srivastava[2]

Botany Department, D.S. College Aligarh, Dr Bhimrao Ambedkar University Agra, India

Abstract: ***Riparian region is an interface between water body and landscape. Riparian regions are rich in biodiversity. 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 54 plant species were found on the study site. Chamaephytes plant species were found maximum in number while Geophtes plant species were minimum in number. In rainy season Maximum plant species were found in germination and vegetative phase.***

Keywords: Riparian, Chamaephytes, Geophytes

1. Introduction

Riparian ecosystems are green ribbons of very thickly and well growing vegetation located adjacent to water bodies. Riparian region is the area where land and aquatic ecosystem interact. Riparian regions serve as habitat for aquatic and terrestrial organisms as buffer regions (1), stabilize stream banks, reduce pollution in streams (2), filter fine sediments from runoff, uptake excess nutrients from runoff, provide energy for stream organisms (3). Riparian regions are rich in diversity of flora, fauna and environmental processes. Many rare species also found in riparian regions (4). Riparian regions show high plant productivity. Riparian vegetation provide dead organic matter (detritus) which support stream communities. Riparian regions are important buffer regions for non- point source pollution, thus enhance the health of aquatic ecosystem. Riparian buffer having a mixture of shrubs, trees and grasses show more efficiency in capturing wide range of pollutants than a buffer region that have only trees or grasses (5). Keeping view on importance of riparian regions the phenological study of riparian plant species is done.

2. Material and methods

Study site was at Karban river in Iglas (Aligarh) U.P. Study site was divided in to two different sites 1.Disturbed land (site-I) and 2.Undisturbed land (site-II). Riparian plant species were enlisted weekly in rainy season (July to September) for phenological study and life forms. Phenological events (germination, vegetation phase, flowering, fruiting, mature seeds and death of the plant) were recorded. Vegetation analysis was done by Raunkiaer's method (6) and identification of plant species was done by the help of Flora by Duthie (7) and Grasses of U.P. by Bor (8).

3. Result and Discussion

At both study site 54 plant species were recorded in rainy season for phenological study and life form. 47 plant species were observed on site I and 54 plant species on site II. On both the site 47 plant species were found common in both sites and 7 plant species were found only on undisturbed site in addition to common species. The proportion of plant species fall under Chamaephytes was maximum in number while proportion of plant species fall under Geophytes was found minimum .In another study by Sharma and Sharma along hill stream the number of Therophytes were recorded highest while number of Geophytes were least (9). 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 (m)	Slope angles
I (100x5)	Lower Zone	0-2	25^o -35^o
	Higher Zone	2-12	50^o -55^o
II (100x5)	Lower Zone	0-3	20^o -25^o
	Higher Zone	4-12	35^o-40^o

Table 2: Life form and phenology of the plant species Common on both the site I&II

Germination	Ph-Phenerophytes
Vegetative Phase	Ch- Chamaephytes
Flowering	H- Hemicryptophytes
Fruiting	G- Cryptophytes or Geophytes
Mature seeds	Th- Therophytes
Death of the plant	

Name of the species	*Family*	*Life form*	*July*	*August*	*September*
Abutilon graveolens W&A	Malvaceae	Ch	1, 2	1, 2	2, 3
Acacia nilotica (Linn.) Del	Fabaceae	Ph	1, 2	1, 2	1, 2
Achyranthes aspra Linn.	Amaranthaceae	H	1, 2	1, 2	2, 3
Acalypha indica Linn.	Euphorbiaceae	H	1, 2	1, 2	2
Ageratum conyzoides Linn.	Asteraceae	Ch	1, 2	1, 2	1, 2, 3
Alternanthera sessile R. Br.	Amaranthaceae	Th	1, 2	1, 2, 3	2, 3, 4
Amaranthus viridis Linn.	Amaranthaceae	Ch	2	2, 3	2, 3, 4
Anagalis arvensis Linn.	Primulaceae	Th	-	1	1, 2

Boerhaavia diffusa Linn.	Nyctaginaceae	Ch	1, 2	1, 2, 3	1, 2, 3
Cajanus cajan (L.) Mill.	Fabaceae	Th	-	-	-
Calotropis procera R. Br.	Apocynaceae	Ch	1, 2	1, 2	1, 2
Cannabis sativa Linn.	Cannabaceae	H	1, 2	1, 2	2
Cassia occidentalis Linn.	Fabaceae	Th	1, 2	2	2, 3
Chenopodium murale Linn.	Chenopodiaceae	H	1, 2	1, 2, 3	2, 3, 4
Coccinia indica W..& A.	Cucurbitaceae	Th	1, 2	1, 2	2, 3
Commelina benghalensis Linn.	Commelinaceae	H	1, 2	1, 2	2
Convolvulus pluricaulis Chois.	Convolvulaceae	H	-	1, 2	1, 2
Corchorus tricularis Linn.	Tiliaceae	Th	1, 2	1, 2, 3	2, 3
Croton bonplandiamnum Linn.	Euphorbiaceae	Ch	1, 2, 3	1, 2, 3	2, 3, 4
Cynodon dactylon (Linn.) Pers	Poaceae	G	2, 3	2, 3	2, 3, 4
Cyperus rotundus Linn.	Cyperaceae	G	1, 2	2, 3	2, 3, 4
Dactyloctenium aegyptium (L.)	Poaceae	G	1, 2	1, 2, 3	2, 3, 4
Dalbergia sissoo Roxb.	Fabaceae	Ph	2, 4	2, 4	2, 4
Dichanthium annulatum (Forssk)	Poaceae	G	1, 2	1, 2, 3	2, 3, 4
P. Beauv.					
Digera arvensis Forsk.	Amaranthaceae	Th	1, 2	1, 2, 3	2, 3, 4
Digitaria ciliaris (Retz.) Koel.	Poaceae	G	1, 2, 3	1, 2, 3	2, 3, 4
Eclipta alba Hassk	Asteraceae	Ch	1, 2, 3	1, 2, 3	2, 3, 4
Euphorbia hirta Linn.	Euphorbiaceae	H	2, 3, 4	2, 3, 4	2, 3, 4
Ipomoea Fistulosa Mart.	Convolvulaceae	Ch	2	2	2
Ex Choicy					
Lantana camara Linn.	Verbenaceae	Ph	2, 3, 4	2, 3, 4	2, 3, 4
Malvestrum tricuspidatum	Malvaceae	Th	1, 2	2	2, 3
A.Gery.					
Ocimum canum Sims.	Labiatae	Th	-	-	2, 3
Oxalis corniculata Linn.	Oxalidaceae	H	2, 3, 4	2, 3, 4	2, 3, 4
Parthenium hysterophorus L.	Asteraceae	Ch	2, 3, 4	2, 3, 4	2, 3, 4
Paspalum Scrobiculatum (Linn.)	Poaceae	G	2	2, 3	2, 3, 4
Pennisetum typhoides S & H	Poaceae	Th	1, 2	2, 3	4, 5, 6
Phyllanthus niruri Linn.	Phyllanthaceae	Th	1, 2	2, 3, 4	2, 3, 4
Polygonum glabrum Willd.	Polygonaceae	Ch	2	2	2, 3
Pongamia glabra Vent.	Fabaceae	Ph	2	2	2, 3
Ricinus communis Linn.	Euphorbiaceae	Ph	2	2	2
Saccharum benghalensis Linn.	Poaceae	Ch	2	2	2, 3
Setaria Gluaca Linn.	Poaceae	G	1, 2	1, 2, 3	2, 3, 4
Sida accuta Linn.	Malvaceae	H	1, 2	1, 2, 3	2, 3, 4
Solanum Xanthocarpum Schrad.	Solanaceae	H	4, 5, 6	-	-
Tridex procumbens Linn.	Asteraceae	H	1, 2	1, 2, 3	2, 3, 4
Withania somnifera (Linn.) Dunal	Solanaceae	H	-	1	1, 2
Xanthium strumarium Linn.	Asteraceae	Ch	1, 2	2, 3, 4	2, 3, 4

Table 2: Life form and phenology of the plant species found on site II

Name of the species	Family	Life form	July	August	September
Datura alba Nees	Solanaceae	Ch	1, 2	2, 3,	2, 3, 4
Eragrostis tennela (Linn.) Roem & Schul	Poaceae	G	1, 2	1, 2, 3	2, 3
Gomphrena celosioides Mart	Amaranthac eae	Ch	1, 2, 3	1, 2, 3	2, 3, 4
Heliotropium Ovalifolium Forsk	Boraginaceae	Th	2, 3, 4	2, 3, 4	3, 4, 5
Saccharum spontaneum Linn	Poaceae	Ch	2	2, 3	2, 3, 4
Triumfetta rhomboidea Jacq	Malvaceae	H	1, 2	1, 2, 3	2, 3, 4
Zizyphus nummularia (Burm.f.)	Rhamnaceae	Ph	2	2	2

References

[1] Kocher, S.D. & Harris, R.: Riparian vegetation publication 8240. Forest stewardship series 10. University of California 7pp. (**2007**)

[2] Sweeney, B.W., Bott, T.L. Kalpan, L.A., Newbold, Standley, L.J., Hession, W.C., Horwitz, R.J., wolman, Riparian deforestation, stream narrowing and loss of stream ecosystem services. Proceeding of the National Academy of Sciences of the USA, **101:** 14132-14137 (**2004**)

[3] Nakano, S. & Murakami, Reciprocal subsides: Dynamic interdependence between terrestrial and aquatic food webs. Proceedings the National Academy of of Sciences of the USA **98**: 166-170 (**2001**).

[4] Naiman, R. J., Decamps H. & Mc clain, M.E.: Riparian ecology conservation and management of streamside communities Elsevier, Amasterdom (**2005**).

[5] Jontos, R.: Vegetative buffers for water quality protection: An Introduction and guidance document. Connecticut association of wetland scientists white paper on vegetative buffers. Drafts version 1.0.22 pp (**2004**)

[6] Raunkiaer, C.: The life forms of plants and statistical plant geography .Oxford University Press, Oxford 632 (**1934**).
[7] Duthie, J.F.: Flora of the upper Gangatic Plain and of the adjacent Siwalik and Sub Himalayan tract/ Calcutta: Botanical Survey of India (**1960**).
[8] Bor, N.L.: Manual of Indian Forest botany. London Oxford University press 111-112 (**1958).**
[9] Sharma A. & Sharma N.: Floristic, leaf size spectra and life form distribution of riparian vegetation along a hill stream, Bhaderwah, Jammu and Kashmir, India. Asian Journal of Plant Sciences, **19**:91-106 (2020). **DOI:**10.3923/ajps.2020.91.106.