

ECOLOGICAL EFFECT OF RIVER BHAGIRATHI AND MATLA RIVER

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ABSTRACT

The channel of Bhagirathi River is the branches off from the Bhagirathi at Nurpur (lower course of the Bhagirathi). Bhagirathi River is one of the Principle Rivers in Murshidabad area. Dissecting the picture of the Bhagirathi River in it is discovered that noteworthy changed has been happened in southern some portion of the river and less change is found in the center part which is near the Berhampore town. The Bhagirathi River downstream from Fort Matla River in Montana, a significant alluvial river with stream exceptionally irritated by guideline, was chosen for contextual investigation. Guides and elevated photos were accessible when dam development. This symbolism was investigated by digitizing channel centerlines at progressive inclusion's under pre-dam and post-dam conditions, and mean migration rates were registered by twist and by reach. The mean pace of channel centerline migration tumbled from 6.6 m yr⁻¹ to 1.8 m yr⁻¹ after impoundment. Curve mean channel action rates were just pitifully connected with factors portraying channel structure and geometry. Results demonstrate that stream guideline for flood control and hydropower creation average of the investigation arrives at effect sly affected river passage dynamism, with suggestions for natural surroundings type dispersion and biological system trustworthiness.

KEYWORDS: Ecological Effect, Bhagirathi River, Matla River, biological system.

INTRODUCTION

Investigation of rivers in Geomorphology has encountered a u-abandon 1960s and 70s because of development of dams and channel control. Human effect on rivers was the significant concentration for an enormous number of exploration works, yet another milestone, perhaps from 1990s with respect to man-river cooperation changed the request of sociologies into a multi-disciplinary methodology. In such manner, river has been examined as a

piece of delightful nature, as an asset base and furthermore a functioning specialist for man-river collaboration containing components of misfortune just as song since days of yore. Present work is likewise a copy of river individuals association with an alternate radiance in light of its structure of request and example of examination. Sundarbans is one of the most excellent terrains of rivers. It is structured by numerable rivers, among them Matla, is a significant river of this locale. Dream activity and environmental set up of this river are practically homogeneous; however the effect of the dream activity is brimming with assorted variety with dynamic positive effect just as unimportant negative results. Tempest floods, flowing immersion have often showed up as risks. Be that as it may, river Matla resembles a mother to the individuals along its course.

Monetary exercises regarding fishing, prawn assortment and decent variety of rural practices are natural as well as extremely famous. In various physic social scenes dream environment is articulated with risks; individuals are more stressed over annihilating nature of dangers and accordingly once in a while perceive the endowments of environment. In any case, the occupants of Matla adapt up to risks without any problem. In addition to the fact that they have a forceful feeling for their country, they likewise feel a unique desire about the excellence of the dream environment. The monstrous receptiveness, the sparkling waterscape, the seaside wind and the musical tide have been fused in their brain and the spirit, making an uncommon conduct reaction, having a critical articulation in the social connection and communication. The current request will surely unfurl the elements of financial and conduct intellectual space with some point of view of human ecological setting.

JUSTIFICATION FOR THE SELECTION OF ESTUARINE ENVIRONMENT AND MATLA RIVER

Rivers can be grouped essentially into three classes – enduring rivers supported by downpour water in muggy season and liquefy water in summer; non-perpetual rivers helping water through rainfall just and the flowing rivers fundamentally keep up its stream by flowing water interruption. The current request concerns the river-individuals connection of the Matla River the biggest flowing river of Sundarbans of West Bengal. The hydro-elements and the channel character of the said river are essentially constrained by flowing activities. Among these three sorts, water activity and the environmental set up for the flowing river is generally unique and undertakings. The area of such rivers is near the ocean, and accordingly it is fed by flowing activities offering a lot of fishing assets. Furthermore, area of mangrove timberland gives a natural ecological set up to which man feels unique connection.

The water level moves good and bad times, yet never goes down underneath as far as possible or never evaporates. On the Contrary, enduring rivers in West Bengal related with the flourishing of mainstream farming practices however the environment identifying with it is profoundly altered. Such an alteration prompts an alternate setting of man-environment advantageous interaction thus likely it turns out to be very counterfeit. The non-perpetual rivers offer outrageous hydrological conditions with its pinnacle release in the rainstorm causing bank disintegration and flooding, while in winter valley gets dry. Such river in dry season has no utilization in water system works. Through field examinations (In Ajay River, West Bengal) it has been called

attention to that such a hydrological swaying cause's weak connection of individuals with the reverie environment. Henceforth, considering the aforementioned contentions flowing estuarine environment has been considered for the examination of man-river communication.

In the Sundarbans, river is the mixture of life. Various rivers, streams, creeks create the plan of the district just as impact jobs of individuals of this zone. With the course of time man has continuously changed the estuarine biological system, yet river despite everything play out its job either through gift or decimation. Impact of these flowing rivers is inserted in so profoundly that it is difficult to isolate individuals from river for the current examination. In view of a few writings and pilot field examination, Matla River has been chosen for arranging the structure of present request. The accompanying contentions have been set in the courtesy of determination of Matla River.

1. Matla is the biggest flowing river in the Sundarbans,
2. This is maybe the most expanded river regarding geomorphologic conditions among different rivers of the locale.

The river has been silted quickly at the northern part thus likely accessibility of water assets has been diminished definitely. The river at the North becomes shallower and hence it hampers vessel route and day by day social connection between the individuals of the two banks. Then again, river at the South is totally vigorous, wide and open. The siltation cycle is very moderate thus water asset is generally bountiful. In any case, the likelihood of confronting perils is by all accounts high at the South, yet stylish delight is relatively better than the North Such sort of assorted variety offices to be viewed as assortment of tests from North to South.

3. Matla river is situated at the focal aspect of the Sundarbans. This part covers mostly four squares. Canning-I, Canning-II and Kultali are arranged at the correct bank, while Basanti is situated at the left Bank. These four squares have been populated by individuals of East Bengaline and West Bengaline. These two surges of relocated individuals are very not quite the same as one another. The East Bengaline generally relies upon fishing; notwithstanding, West Bengaline wins their bread from agrarian occupation. Such contrasts of various financial exercises are found to happen that encourages comprehending various parts of man environment relationship. As to different rivers, the individuals dwelling there are either East Bengaline or West Bengaline

The current examination thinks about just the left bank of the Matlariver. The purposes for such determination are complex. Initially, it is difficult to manage the two banks as the size of the investigation region would be enormous. As the examination is exclusively reliant on the essential fields, tremendous information may create some abnormality and may destroy the pith of request. Second, the settlements situated at the correct bank are not many in number and scantily divided, though at the left bank it is nonstop and more in number. Consistent nearness of settlements can give a superior chance to spatial investigation. Third, individuals living along the left

bank either close or away from the river are profoundly reliant on the riverine environment, in light of the fact that at the left half of the Sundarbans (eastern part) mangrove timberland and flowing rivers are generally bountiful.

IDENTIFICATION OF THE INFLUENCE ZONE OF MATLA RIVER

Matlariver streams along the western piece of Basanti square and projects a significant effect on the individuals living near it. With the expanding good ways from the river its impression is step by step became dull, however up to a specific separation (inside 6 KM), it offers positive impact on the life of the individuals. Individuals living shut to river side are financially just as socio-socially appended with the river; anyway individuals from the river depend just for their social-social association. At the eastern aspect of the Basanti hinder (inverse to Matla River), another river streams named Bidya which makes them favor just as wrecking impact on the individuals living near it. Subsequently, both the rivers are significant in the life of the individuals. However, Matla is wide just as long enough, yet water assets are more successive in Bidya River than Matla. Considering both the rivers equally noteworthy, the square has been isolated into equivalent parts from the North toward the South. The western half has been viewed as the impact Zone of Matla River, while the eastern half for the river Bidya.

SOME GLIMPSES ON THE SUNDARBANS

Location and Extent

Geologically the Sundarbans is arranged between 21 0 32" to 22 0 40" north scopes and between 88 0 05" to 89 0 00" east longitudes (. The locale incorporates a few pieces of South 24 Parganas and North 24 Parganas areas of West Bengal. Out of nineteen CD squares thirteen exist in the South 24 Parganas.

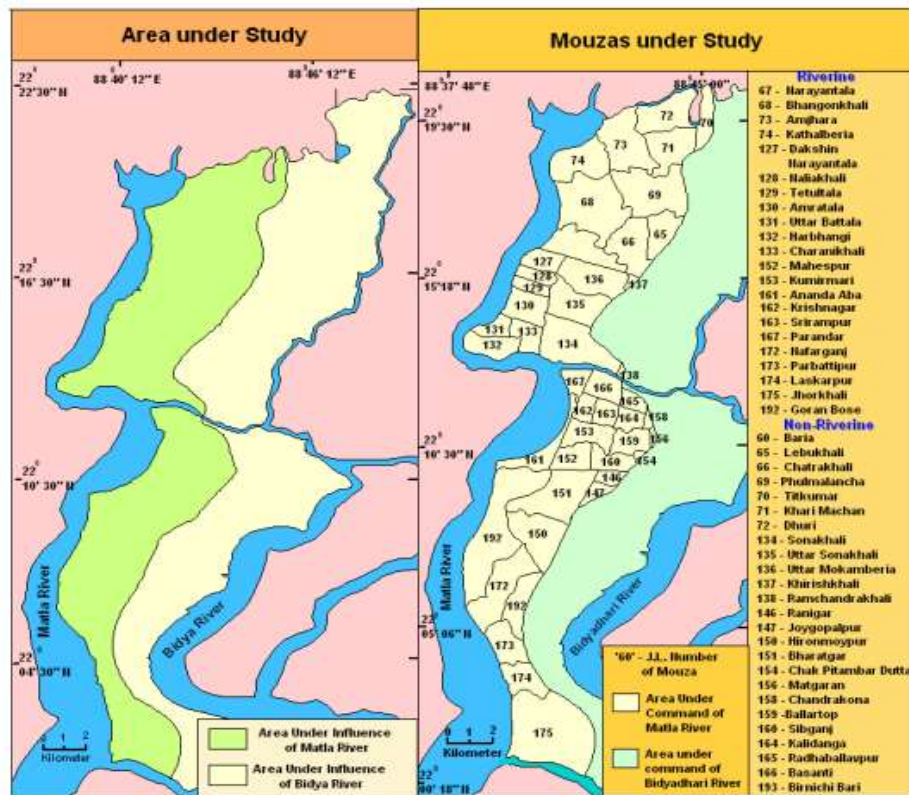


Figure 1.1: Source Map

These are – Basanti, Canning-I, Canning-II, Gosaba, Jaynagar-I, Jaynagar-II, Muthurapur-I, Muthurapur-II, Kultali, Patharpratima, Kakdeep, Namkhana and Sagar. Rest six squares are situated in the North 24 Parganas named – Hasnabad, Haroa, Hingulgunge, and Sandeshkhali-I, Sandeshkhali-II and Minakhan. The locale has fake land outskirts just as natural water limits. It has expansion along the ocean front of the Bay of Bengal in the South, Bangladesh guest in the east, while the river Hugli, workers as the western furthest reaches of the Sundarbans. The northern limits of some CD squares (Hasnabad, Minakhan, Haroa, Canning-II, Canning-I, Jaynagar-I, Muthurapur-I and Kakdeep) limit its northern augmentation.

Table 1.1: Administrative Units of the Sundarbans

District	Sub-divisions	CD Block
South Parganas	Alipur	Basanti, Canning-I, Canning-II, Gosaba, Jaynagar-I, Jaynagar-II
	Daimond Harbour	Muthurapur-I, Muthurapur-II, Kultali, Patharpratima, Kakdeep, Namkhana, Sagar
North Parganas	Basirhat	Hasnabad, Haroa, Hingulgunge, Sandeshkhali-I, Sandeshkhali-II, Minakhan

BIOLOGICAL SETTING

The natural solidarity of the Sundarbans generally relies upon the geomorphic factors like measure of immersion, the residue types and soil qualities . The mangrove backwoods created in this area can endure high measure of saltiness and can withstand with most extreme immersion during the elevated tide. Nonetheless, a few animal

types need new water alongside saline water for their development. In this way, the area is advanced with assortment of species that establishes 70% of world's mangrove species. Such rich timberland embraces a few qualities like – respiratory root, tying down root and so on to modify with this saline environment. The south-eastern parts just as certain patches of the south-western part in the Sundarbans are secured with thick backwoods which is separated into two territories – the cushion region and the center territory. The northern aspect of the woodland incorporates the cradle zone, while the center zone is situated at the South.

Alongside this mangrove timberlands a few creatures are living around there have gloriously received themselves with the general environment. Tiger became salt water buyer and built up the propensity for swimming, deer received in the damp muggy zone rather than earthbound prairie. Tunneling creature knows precisely the circumstance of musical pattern of tides and modify appropriately. In general, the vegetation and the fauna have embraced by necessities of their endurance and modify in this regular estuarine biological system.

The river and her kin is the focal point of the current request. In this setting a significant number of books and articles have been looked for forward as a section research system. Various writings have been gathered among which some are lesser noteworthy in talking about man-river cooperation or relationship. These writings focus on the issues identifying with physical cum environmental parts of this district. Be that as it may, the current investigation is an endeavor to coordinate the physical and social personality of the locale; subsequently it depends on those written works which have noteworthy spotlight on changing physical environment, changing social environment and the connection between these two.

THE IMPORTANCE OF THE TEXTURE OF THE SOIL IN THE DEVELOPMENT OF MEANDER BENDS:

Notwithstanding the processes talked about over, the surface of the dirt has a significant impact in the improvement of the meander-twist. Contingent upon the surface of the dirt, particularly its friable nature, the meander-curves of the river Bhagirathi have been broadened and pushed ahead, subsequently extending the river course and therefore diminishing the overall incline of the thalweg, so as to lessen the speed of the streaming water until the erosive intensity of the flow is carried into harmony with the obstruction of the dirt. In the event that the dirt were more reduced and combined and the speed consistent, the river would have worked back on itself in a round circle But however the delicate alluvia shaping the Bhagirathi valley is practically homogeneous in surface, the speed of the water has not been at all steady, because of the variety in the releases got from the Farakka Barrage and from the western feeders of the Bhagirathi every year, subsequently notwithstanding the development of the roundabout circle.

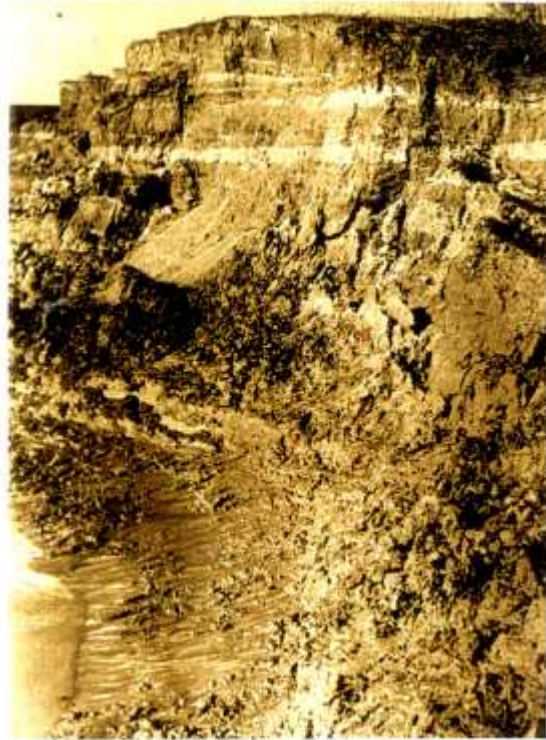


Figure 1.2: Such high caving concave banks (about 10 m in height) are generally produced by water bodies through the process of continuous toeing at Patuli.

Yet, the curves of the two progressive circles now and again cut into one another or they might be brought so close to that only a limited neck is regularly left isolating them. During a high flood, notwithstanding, the hurrying water removes the neck and streams under an expanded slant, inferable from the shorter length of the channel into the circle underneath. In this manner, except if the impedance by human office as counterfeit banks, and so on., come to communicate with the natural process of disintegration, the previously mentioned will in general offer ascent to dynamic expansion of meander twists with a definitive development of "shorts".

Roles played by the fluctuating discharge and the gradient of the thalweg in the formation of meanders:

The inclination of shortcircuiting is a programmed process because of the fluctuating release of the river Bhagirathi which will in general psychologize long so as to conform to the adjusting diminished volume of water and in this way expanding its angle in order to set up balance between the process of disintegration and testimony. Before, when the 91 release was heavier, being supported by the bigger supply from the parent river Bhagirathi, the river expanded its length by meandering in order to decrease the angle of the thalweg. In any case, today, as the river is exposed to a decreased volume of release, a propensity to fix its course has occurred to expand its inclination, which empowers it to keep up a perpetual stream all through the course notwithstanding its diminished release.



Figure 1.3: Increase of the erosion process due to the circulating water, the bank of the river gradually recedes at Patuli.

In any case, again increment in angle of river will in general increment the speed of the streaming particles of water and as such the process of disintegration is elevated, imperiling the close by settlements. These dissolved materials will at last increment the suspension heap of the river water, which will inevitably be not able to convey them downstream, and will drop them on its own bed to frame sandy reefs, which will eventually bring about the twisting course of the river. To have an away from of the river bend and their structures, different investigations like the investigation of sinuosity, its connection with change have been made. An endeavor has additionally been made to consider the limit of a meandering river which eventually prompts a cut-off in the river.

DISCHARGE AND SEDIMENT CONDITIONS OF THE RIVER BHAGIRATHI

The river Bhagirathi has been getting water at a changing rate through the feeder trench, after the charging of the Farakka Barrage Project since 21st April 1975. The river Bansloi and the river Pagla contribute an extra release to the river Bhagirathi during the pinnacle freshets as it were. The greatest release at Jangipur during the freshets of 1993-94 was recorded as 1056 m³/sec (Report CPT 1994-95). The release perception at Jangipur is exceptionally sporadic because of different reasons. The feeders which add to the progression of the river Bhagirathi further down are the Uttarasan and the Babla. These rivers join the river Bhagirathi around at 109 km and 139 km, downstream of the Feeder channel outfall separately. The progression of these feeders is occasional. The rivers Uttarasan and Babla are interconnected and the framework shapes such a circle with the river Bhagirathi.

Generally there is reverse from the river Bhagirathi into the river Uttarasan, which at last streams down through the river Babla into the river Bhagirathi. The greater part of the rainstorm streams of the river Uttarasan are additionally occupied through the river Babla. Just at high phases of the river Uttarasan, the river Bhagirathi gets minimal release from it for a set number of days during the freshet (Report CPT 1993-94). The river Ajay joins the river Bhagirathi at Katwa, a good ways off of around 150 km, downstream of the Feeder channel outfall. This river portrayed by showy pinnacles gets coarse dregs and discharges it into the Bhagirathi, causing Bhagirathi to act sporadically in its lower comes to. Cut-off at Sankhapur-Mayapur seems to have occurred during the freshets of 1989. Accordingly the pinnacle release of the river Bhagirathi at Purbasthali couldn't be taken after 1989 as the station has been deserted because of cut-off at this span during the year 1989

CONCLUSION

The facts confirm that when populace has quickly been expanding it is hard to person to keep the nature like waste system in its own structure. In any case, then again it is similarly obvious that any sort of financial exercises without complying with the Principles of nature will at last bring conservative and ecological disappointment, as Neodeterminism Concept says. Along these lines, this is to time to stop some time and thoroughly consider the effects of past human exercises on nature and to make arrangement for the foundation of an ecologically adjusted nature. Should this fantasy be understood, the investigation would clearly acquire its most wanted worth, and that would be accolade for the locals of Matla-Bidyadhari interfluve of South 24 Parganas, West Bengal. From the above small scale level hydro-geomorphological examination it is a lot of clear that the fluvio-geomorphological condition in the Matla-Bidyadhari interfluve has been changing since last 8 ninety years and each geomorphic divisions of this interfluve have their own locational and hydro-morphological centrality. The concealed flowing instruments behind each second land building and land losing measures in this biggest delta of the world can be perceived from this investigation of fluvio- geomorphologic condition of MatlaBidyadhari interfluve which itself has as most extreme hydro-morphological similitude's with different pieces of the Sundarban delta. The develop and dynamic deltaic locational hugeness, the erosion and deposition done by the biggest and most ruinous river like R. Matla and an ageold meandering R. Bidyadhari with heaps of impressions of prior flowing exercises in this piece of Sundarban delta, is clearly a model territory in Sundarbans to clarify the changing idea of the flowing rivers, flowing brooks and the explanations for the present hydrological issues like expanding saltiness, immaterial bank erosions, abrupt penetrating of dikes and so on.

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