



Shilabati River: Its Environment

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Abstract

The mixing of huge quantities of eroded materials from the upstream and middle stretches deteriorates the water quality of Shilabati River downstream. Along with such huge sediment load, discharge of untreated wastewater from both point and nonpoint sources results in the water of Shilabati River being unusable. Though water quality rating shows water in good conditions after calculation of water quality index still the river water is not to be prescribed for drinking, outdoor bathing, or other domestic purposes as the faecal coliform bacterial count is more than the permissible limit as standardized by the Central Pollution Control Board. Apart from the water conditions, Shilabati River is known for its geographical and historical importance.

Keywords: Water quality index, pH, Suspended solids, Water hardness, Gangani, Chuar rebellion

Introduction

Shilabati, or Shilai, is a small river in southwestern West Bengal. Shilai flows over Purulia, Bankura and Paschim Medinipur districts. Originating near the town of Pancha in Purulia, the river flows through deep forests and enters Bankura [1]. The main tributaries of Shilai in Bankura are Jayapanda and Purandar. Also, several other small rivers join Shilai at Bankura. Then it flows southeast through Simlapal and enters Paschim Medinipur district. The main tributaries of Shilai in West Midnapore are Kulbai, Tamal and Parang. Among them, the Kulbai or Kubai River originates near Tangasol and crosses the Medinipur-Bankura railway line to join the Tamal River near Mugbasan and this confluence flows into the Shilai River near Narajol. But there is no water in the Shilai or its tributaries except during the rainy season. Flowing through Garbeta and Kharkusma in Paschim Medinipur, Shilai joins the Dwarkeshwar River at Bandar – Pratappur

near Ghatal. Ghatal is the only municipal town and an important commercial center located on the banks of Shilai river. Shilabati River is included in Damodar basin and water pollution is observed from Ghatal to Nischindipur about 3.8 km downstream of the river along its course. Although it is a narrow stream for several miles from the source, the Shilabati River is relatively wide in the middle stretch. In the middle stream of Shilabati, Gangani is the famous Grand Canyon of Bengal on the riverbank near Garbeta where many researchers come for geography research. Again, the forest surrounding the Gangani plain is the place of history of the centuries old Chuar Rebellion. Along with such enriched history and geography, the myths and old story of Gangani is heard from the local people's belief. The rich history, mythology, and geography surrounding the Shilabati and above all the qualities and characteristics of the river water is the focus of this study.

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Myths and Local Belief

The people of the district think that the river also has a birthday. Every year on the day of Poush Sankranti, a fair is held near Baragram in Hura, at the source of the river Shilabati. It is a three-day fair. But the broken fair remained for about a week. There is a pond near Baragram village on the Puncha-Purulia road which is the venue of that fair held every year. The river is believed to start from there. Some of the local residents think that the river Shilabati is the daughter of the family. According to folk belief, in the village where Shilabati originates, a holy man lived in a cottage, his name was Jaya panda, and his disciple Shilabati lived with him. Once the holy man decided to go on a pilgrimage to the confluence of the Ganga Sagar, the disciple Shilabati on hearing the holy man's wishes stood on one leg to go to the pilgrimage site, but the holy man is reluctant, because there is danger of thieves, robbers, tigers, wolf, and jackals on the way, necessarily his disciple Shilabati hands a package to the holy man and says that by throwing this package into the water of Ganga Sagar confluence, his pilgrimage will be completed. The holy man saved himself from many dangers on the journey with that package, from the paws of tigers, from the sticks of robbers. Now when he reached the pilgrimage place and threw the package into the water of Ganga Sagar, just then two hands came up from the water and took the package and disappeared again under the water. The holy man was surprised and came back to his shelter in seven haste. When he returned to the cottage, he saw that his disciple Shilabati was coming towards the cottage with a pitcher of water. Seeing the holy man, the Shilabati dropped the pitcher full of water and ran in the opposite direction, its flowing water became the river named Shilabati. But the holy man did not give up on the flow of Shilabati, he ran and caught his disciple Shilabati some distance away from Garbeta, and his desire was fulfilled, and ultimately the holy man and his disciple united. Thus, the Jayapanda tributary joins the Shilabati River. Since then, Shilabati is the daughter of every family from Puncha to Hura region in Rarha Bengal. Shilabati is a beautiful small river. At the end of her journey, Rupnarayan is

born from the union of the Dwarakeswar river with the beautiful Shilabati shining in form. Around this saying, a fair gathers every year by the river. There is also a committee to manage the fair. And a temple is erected in the name of Goddess Shilabati adjacent to a pond in the square. Boats operate there during the fair. There are street vendors, and all kinds of shops. Many come to the temple and pass the clay idol of Goddess Shilabati.

Environmental Scenario

Sometimes people's actions upset Shilabati who is like a daughter of the local residents because the navigability of the river decreases at normal speed. But the role of people is no less to block the path of any flow. The stream is dying for them. Bengal is known for its river civilization. The importance of the river becomes clear to us. The river with which the folklore is intertwined is no less important. People thought about the river because of its importance in public life. Rumour has been created. But if the river is gradually polluted, then ? get upset but many people do not understand the impending danger. Shilabati is one such important river. All over the country there is a study going on about river pollution, because fresh water reserves are decreasing gradually. But no such organizations or environmental activists have started working on Shilabati in West Medinipur. The administration does not care. In Shilabati, thermocol plates and bowls are sometimes floated. During the festive season, flocks of plastic-thermocol plates get stuck on bamboo poles above the river. Locals pushed the garbage with bamboo to save the wooden bridge of indigenous materials. Again, they floated in the river water. And this is a familiar sight on the Shilabati River. Shilabati has been used in many ways for a long time. There are no large-scale factories in the region except a few small-scale like insane stick and battery manufacturing units. Naturally, the factory waste does not pollute the river. But settlement has made up for that deficiency. How does pollution spread? Anytime anybody goes, he will see piles of garbage on the banks of the river. During the collection of various resources of the river, including sand, the riverbed is being cut unscientifically. It is putting pressure on the bank. If anyone looks

along the banks of the river, he will see signs of such atrocities in the basin of Shilabati. Ghatal municipality officials and public representatives agree about the pollution, including the Irrigation Department too. But no steps have been taken yet to prevent pollution. When will the river be freed from human-made pollution? No one knows the answer. The river gets polluted from the waste left by the tourists and the picnic parties at Gangani in the middle stretch of the Shilabati River. Gangani is a geographically important historical place for tourism.

Gangani

Gangani is located on the banks of river Shilabati and is famous locally as the Grand Canyon of Bengal. Gangani is very close to Garbeta in Paschim Medinipur district. Local people believe that a battle took place here, which belongs to mythology, after seeing all the different landforms in the slopes and plains of Gangani. Characters like Bakasura and Bhim of the Mahabharata are behind the myth told by the local people. Local people believe that Bakasura used to live in a huge cave in Gangani. At that time, the demon Bakasura was very powerful in and around Gangani and a whole person was chewed by Bakasura every day for his lunch. On such a happy day of Bakasura, the Pandavas all appeared together around Gangani. The Pandavas were then in anonymity, so they took refuge in a Brahmin family at Bhikhnagar in the left bank of Shilabati River and opposite to Gangani disguised as Brahmins. One day the time came for the Brahmin family when one of them had to go to be eaten by Bakasura, the family in which the Pandavas were sheltered. From the sound of crying in that family, the Pandavas came to know about the daily routine of Bakasura's midday meal. After knowing the facts

about the lunch schedule of the demon, Mother Kunti ordered Bhima, the second Pandava to go and face Bakasura at his cave and there was a fierce battle between them. Bakasura was defeated and killed in this battle. But under the force of war, the 30-meter-high hill of Gangani and its plains got twisted. As a result, Gangani's plain is high and low, messy, and uneven. This myth is told by local people across Gangani.

The reason for the landform variation of Gangani is however different. The ground water level fluctuates due to the huge rain in monsoon time and dry river during the rest of the year. This results in fluctuating humidity and dryness. As a result, laterite is formed. Rainfall, temperature, wind speed etc. continued working on laterite erosion for the period from 2 million to 10,000 years BP. First the erosion creates micro- to small canals, and then the canals join each other to form gullies. Gully is one type of evidence of land erosion. This canal and gully together form the present topography of Gangani which is locally known as the Grand Canyon of Bengal. Erosion on the 30 m long slope of Gangani has created various structural variations like the shape of pagoda, temple, pyramid, wild buffalo, and even a shape of a human being covered with various colours like red, grey, white etc. All in all, Shilabati's geological manipulation, Gangani,



Fig. 1 Shilabati River at Gangani near Garbeta of Paschim Medinipur district

is developed in the whims of nature (Fig. 1).

Apart from folklore and mythology, the landscape of Gangani on the banks of river Shilabati attracts tourists. Not only the topography of Gangani, but also the history of several rebellions spread throughout its thick forests which in modern history are known as Chuar Rebellion. Of late, almost everyone remembers a tragic history of betrayal and wound of Chuar Rebellion in Gangani field. The British forces could not capture Achal Singh, the leader of the Chuar rebellion, despite ravaging the Sal and Piyal jungle with thousands of cannon shots, but Chhatra Singh, the last king of Bagri, ascended the throne after handing him over to the rulers of British India. The British forces caught Achal Singh and his companions red-handed and, without waiting for trial, hanged them in the Gangani field in front of the local people. Not the sighs of the leader of the Chuar Rebellion and his companions, but the jagged peaks of the gorges of the Gangani plains on the banks of the Shilabati, from peak to peak, become intensely coloured in the sun with the anger of the rebellions. Gangani is rich in such a modern history. Today, hundreds of tourists visit Gangani to witness the breathtaking geography, modern history, and mythology.

Results and Discussion

Shilabati originates from Purulia. There is a legend about the origin of the river. And that shows its importance. A woman named Shilabati took refuge with a Brahmin. According to legend, this Shilabati is named after him. In its downstream stretch, a trading center was once built around the river. Shilabati is closely involved in the naming of Ghatal. Once a steamer used to run in Ghatal town. The elders of Ghatal still tell the story of steamer voyage to their grandchildren. Shilabati is now under the influence of pollution. And gradually it is losing its luster.

Pollution of the river Shilabati is not a problem today. However, pollution has been visible for three-four decades. The navigability of the river has decreased a long time ago. As a result, water transport has stopped. But the silt was not removed and reformed. Flooding is a major problem every year as the river reduces its storage capacity. Apart from this, the water of various

rivers, canals and ponds meet in Shilabati. This water also carries various garbages. Shilabati is also filling up. But it is also having a great impact on the ecosystem of the river. Once upon a time, hilsa and shrimp were found in the river Shilabati. Many people made a living by catching fish. But the navigability of the river reduces, the pollution increases, and the number of fish has decreased. Naturally, the number of fishermen has decreased. Otherwise, the ecosystem of the river will be destroyed. Then it will affect the cities and villages along the river. Due to the navigability crisis, various waste materials are accumulating at the bottom of the river. It causes great loss of biodiversity.

One of the reasons for the pollution of the Shilabati is the garbage left on the banks of the river. Ghatal town has a more sinister appearance compared to the parts flowing in the countryside. A part of the riverbank of Ghatal city is full of garbage. Many knowingly and many others have made the riverside a permanent destination for littering. Day after day, for years, piles of garbage have been accumulating on the banks of the river like this. This garbage is directly mixed with the river water as runoff during the monsoon. Then the riverbank becomes empty. After a few days, the riverbank was again covered with garbage. They again go back and fall into the river water. The regret of the people living in Rajnagar on the banks of the river, the current state of Shilabati seems to be not a river, it is like a dust bin.

Dumping garbage on both sides of the river has become a habit in Ghatal town. Garbage from hotels and restaurants is mixed in the river. Plastic thermocol is also deposited on the banks of rivers. Leftovers, leaves, everything is thrown into the river water after the ceremony in the village or town along the riverbank or by the river. Sometimes garbage from municipal and panchayat areas is also dumped on the banks of the river. On the other hand, encroachment is also increasing in and around Shilabati. The land on both banks of the river in Ghatal town is getting vacant. Big pillars are rising near the river. Shops and houses are being built. The normal flow of the river is obstructed by the construction of numerous shops in bamboo structures on the banks of the river. According to

the Irrigation Department, about seventy percent of the land on both sides of the river Shilabati is in the possession of others (Fig. 2). Someone is living there permanently. Someone is doing business again. Sand is mined from Shilabati River in Khirpai, part of Chandrakona. The riverbed is being cut in such a way by bringing down machines to collect sand, which is affecting the ecosystem of the river.



Fig. 2 Shilabati River with huge turbid water at its downstream of Ghatal, Paschim Medinipur

Suspended solids, waste, sewage, and plankton result in turbidity in water. The quality of suspended solids in the river water generally depends on the sediments contributed locally and release of sewage loads from nearby municipal areas [2]. Total suspended solids range from 8 to 396 mg/l and fluctuate mainly during pre-monsoon and monsoon seasons depending on the local contribution of the waste materials from nonpoint sources as well as from the Ghatal municipal areas. Water lathering in the river water adjacent to the municipal areas caused by

the solution of soap is prevented by the hardness which is considered as an important property of water. Consumption of water with hardness beyond the permissible limit results in severe stomach upset with numerous other symptoms in human beings [3]. Total hardness varies from 40 to 140 ppm in Shilabati River water adjacent to Ghatal municipality of Paschim Medinipur district. The pH of river water ranges from 6.4 to 8.35 that represent both acidity and alkalinity characteristics [4]. pH is mostly acidic during pre-monsoon time and alkaline in the post-monsoon season in the river water of Shilabati at Ghatal downstream areas [5,6]. Presence of a few small-scale industries like insane stick and battery manufacturing units on the bank of Shilabati may cause the river water acidic in nature and the municipal waste water discharge admixture with detergents results alkalinity of the river water. The count of faecal coliform bacteria in the river water is very high and varies from 2000 to 80,000 MPN/100 ml [4].

Water Quality

River water of Shilabati receives wastes from both point and nonpoint sources around its flow path. Sometimes sediments meet the river water that not only increases turbidity and total dissolved solids, but the sediments accumulated in the riverbed that decreases the water catchment areas of the river. Water quality index is measured using the standard statistical formula and applying the values published in the Database on environment of Pollution Control Board in 2015 [4]. The result reveals that the water quality condition is good in major seasonal period, but the water is not usable as the coliform bacterial counting of the river water exceeds to much more than that of the number prescribed by the Central Pollution Control Board for drinking and outdoor bathing in the river water or washing utensils or cloths in it (Table 1).

Conclusion

Most of the properties responsible for the poor water quality of the Shilabati River have no specific source. Due to the natural beauty of the Gangani caused by erosion on the banks of the Shilabati River, the influx of tourists and the waste they leave behind, a few factories

Table 1: Water quality index of river water of Shilabati River at Ghatal downstream area

Shilabati River						
Ghatal downstream						
Year/Season	Pre-monsoon		Monsoon		Post-monsoon	
	Min	Max	Min	Max	Min	Max
2013-14	42.2 (Good)	39.41 (Good)	8.74 (Good)	38.87 (Good)	28.4 (Good)	37.33 (Good)
2014-15	40.42 (Good)	64.16 (Poor)	22.22 (Good)	46.37 (Good)	34.73 (Good)	41.64 (Good)

manufacturing incense sticks and batteries, pipes of public toilets directly come into the river and pollute the river water. Sewage from Ghatal Municipality is mixed with the river water without treatment via the pipeline which is the only point source of water pollution in Shilabati River. Despite the situation, the water quality of the Shilabati River is good, although the water is unfit for domestic purposes, and this is because of the presence of bacteria in the river water which is several thousand times higher than the acceptable limit.

The administration should take the initiative to stop littering on the banks of the river. Common people should also be aware. Efforts should be made to keep the river clean. Excessive use of river resources must be stopped. The administration has to stop the normal speed and rush to occupy the riverbed. May Shilabati's natural scenario return to its former state. Let the municipality also be proactive. At least all the residents around the river come forward to stop littering on the banks of the river. Otherwise, the life of the river is ruined. And the effect of that waste will come on people.

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