

## Biomonitoring of Betwa River of M.P.

**Objective:** This project is aimed to assess the water quality of entire stretch of river Betwa in Madhya Pradesh by Biological Water Quality Criteria [BWQC] which used for evaluating water quality based on identification of macro invertebrate families.

Total twelve sampling sites were selected for monitoring to cover entire stretch of river Betwa in Madhya Pradesh. Identification of macro zoobenthos as a bio-indicator used as a tool to obtain information on certain aspects of the river biosphere. The entire river Betwa stretch was divided into three zones i.e.

- (a) Zone I-Mandideep region (04 sampling points)
- (b) Zone II- Vidisha to Ganjbasoda (04 sampling points)
- (c) Zone III – Kurwai (near Bina) to Orchha (04 sampling points)

Monitoring of biological parameters like identification of macro invertebrate and physico-chemical component was carried out. Samples were collected as per CPCB protocol and analyzed by Standard Method of Water and Waste Water [APHA]. Biological Water Quality Criteria [BWQC] used for evaluating water quality based on identification of macro invertebrate families and awarding a specific diversity score and saprobic score designate the quality of river water from class A to E [from least to severe pollution respectively].

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Picture: River Betwa, near Road Bridge, Ganj Basoda



Picture: River Betwa, near road bridge, Bhojpur



Picture: River Betwa, near railway road bridge, Vidisha



Picture: River Betwa, near Bina Refinery (Mahoota)



Picture: River Betwa, near Behind Bundelkhand Resort, Orchha



Picture: River Betwa, near road bridge, Orchha

Observation of presence of macro zoobenthos in two years (2017-19) study depicted as below:

**Year 2017-2018**

S.N	Sites Name	1 <sup>st</sup> Q	2 <sup>nd</sup> Q	3 <sup>rd</sup> Q	4 <sup>th</sup> Q	Activities near Sampling Locations
1.	At D/S Mandideep	C	B	D	C	Water quality degrade due to mixing of sewage nallah
2.	Near road bridge Nayapura, Mandideep	C	C	D	C	Due to Idol immersion water quality degrade
3.	Near Satlapur ind. Growth Centre Mandideep	C	B	C	C	Human influences (Religious activities) & Due to Anthropogenic activities (cattle wadding)
4.	Near road bridge, Bhojpur	C	B	B	B	Human influences (Religious activities)
5.	Near Road Bridge Pagneshwar, Raisen	C	C	B	*	Due to Idol immersion water quality degrade. * sampling not done due to drought
6.	Near railway road bridge, Vidisha	C	C	C	C	Due to Idol immersion water quality degrade
7.	Near intake point, Vidisha	C	B	B	C	Due to Anthropogenic activities (cattle wadding)
8.	Near road bridge, Ganj Basoda	C	B	B	B	Due to Anthropogenic activities (cattle wadding)
9.	Near road bridge, Kurwai	C	B	C	B	Due to anthropogenic activities, vehicle washing
10.	Near Bina Refinery(Mahoota), Bina	B	B	B	B	Stop Dam constructed by BORL, Agriculture activities
11.	Near road bridge, Orchha	B	B	C	C	Due to Idol immersion water quality degrade
12.	Behind Bundelkhand Resort, Orchha	B	B	C	B	Human influences (Religious activities)

As per BWQC the entire river stretch water reveals with class B to C as per BIS 2296 [1982] in most of the sampling points during year 2017-18.

**Year 2018-2019**

S.N	Sites Name	1 <sup>st</sup> Q	2 <sup>nd</sup> Q	3 <sup>rd</sup> Q	4 <sup>th</sup> Q	Activities near Sampling Locations
1.	At D/S Mandideep	C	D	C	C	Water quality degrade due to mixing of sewage nallah
2.	Near road bridge Nayapura, Mandideep	C	D	C	B	Due to Idol immersion water quality degrade
3.	Near Satlapur ind. Growth Centre Mandideep	B	C	B	B	Human influences (Religious activities) & Due to Anthropogenic activities (cattle wadding)
4.	Near Road Bridge, Bhojpur	B	C	B	C	Human influences (Religious activities)
5.	Near road bridge Pagneshwar, Raisen	B	C	B	B	Due to Idol immersion water quality degrade.
6.	Near railway road bridge, Vidisha	B	C	C	B	Due to Idol immersion water quality degrade
7.	Near intake point, Vidisha	C	C	C	B	Due to Anthropogenic activities (cattle wadding)
8.	Near road bridge, Ganj Basoda	B	C	C	*	Due to Anthropogenic activities (cattle wadding) * monitoring Scheduled
9.	Near road bridge, Kurwai	B	B	C	*	Due to anthropogenic activities, vehicle washing * monitoring Scheduled
10.	Near Bina refinery(Mahoota),	B	B	B	*	Stop Dam constructed by BORL,

	Bina					Agriculture activities * monitoring Scheduled
11.	Near road bridge, Orchha	<b>B</b>	<b>C</b>	<b>C</b>	*	Due to Idol immersion water quality degrade * monitoring Scheduled
12.	Behind Bundelkhand Resort, Orchha	<b>B</b>	<b>B</b>	<b>C</b>	*	Human influences (Religious activities) * monitoring Scheduled

As per BWQC the entire river stretch water reveals with class B to C as per BIS 2296 [1982] in most of the sampling points during year 2018-19.

### **Summary:**

**Overall Biomonitoring of Betwa river stretch water reveals with class B to C as per BIS 2296 [1982] in most of the sampling points during year 2017-18 to 2018-19.**