

# Betwa

## GENERAL INFORMATION

- Betwa (Betrawati) River, the second largest tributary of the Yamuna River by length, originates in the Vindhyan ranges in the Raisen district of Madhya Pradesh (550 m asl), and flows for 590 km through the Bhopal, Shivpuri, Vidisha, Ashoknagar, Raisen, Sagar and Tikamgarh districts in Madhya Pradesh, and Jhansi, Lalitpur, Jalaun and Hamirpur districts in Uttar Pradesh.
- It meets the Yamuna River near Hamirpur town (Hamirpur district, Uttar Pradesh).
- Betwa River basin spans an area of about 43,895 km<sup>2</sup> (Figure 1).
- The basin falls under the Deccan Peninsula (Central Highlands – 6A) and Semi-Arid (Gujarat Rajputana – 4B) biogeographic zones.
- The basin experiences moderate climatic regime, with mostly dry conditions except during the southwest monsoon.
- The terrain of the Betwa basin comprises granite, basalt, sandstone and alluvium rocks.
- Key tributaries of Betwa include the Dhasan, Barwa, Parwaha, Jamini and Paricha.

- The population density along the river is 261.09 persons/km<sup>2</sup>.
- Decadal LULC transitions in the Betwa basin (2008-09 to 2018-19) show increases in double/triple cropping (18.66%), built-up area (0.10%), deciduous forest (0.92%), scrub forest (0.90%), and waterbodies (0.10%), while kharif crop (–1.54%), rabi crop (–10.58%), current fallow (–5.50%), and wasteland (–3.06%) declined (Figures 2a and 2b).

Figure 1: Map of Betwa River basin



## BIODIVERSITY VALUE

- Betwa basin is dominated by non-forest areas (84.99%), followed by open forest (8.67%), moderately dense forest (4.53%), scrubland (1.73%) and very dense forest (0.08%) (Figure 3).
- Forest types in the basin include Tropical Dry Deciduous Forest characterized by teak (*Tectona grandis*), sal (*Shorea robusta*), and bamboo (*Dendrocalamus strictus*); Tropical Moist Deciduous Forest with species like sal, teak, jamun (*Syzygium cumini*), amla (*Emblica officinalis*) and mahua (*Madhuca longifolia*); and Tropical Thorn Forest represented by babul (*Acacia nilotica*) and *Euphorbia* spp.
- 95 species of plants have been documented in the Betwa riverscape.
- Key aquatic fauna in the Betwa River include Critically Endangered gharial (*Gavialis gangeticus*; historical record) and red-crowned roofed turtle (*Batagur kachuga*), Endangered Gangetic dolphin (*Platanista gangetica*; in the Orai-Hamirpur stretch), Endangered Indian softshell turtle (*Nilssonina gangetica*), Vulnerable mugger (*Crocodylus palustris*; historical record), and Indian tent turtle (*Pangshura tentoria*).
- 45 avifaunal species (7 orders and 12 families) have been recorded along the river, including winter migrants (20% of the species), and the Near Threatened Asian woollyneck (*Ciconia episcopus*) and river lapwing (*Vanellus duvaucelii*). The basin hosts the Critically Endangered Indian vulture (*Gyps indicus*).
- 94 fish species (13 orders and 28 families), including the Vulnerable *Wallago attu* and goonch (*Bagarius bagarius*), and Near threatened Indian mottled eel (*Anguilla bengalensis*), pangusia labeo (*Labeo pangusia*) and Gangetic ailia (*Ailia coila*), have been documented from the river.

Figure 2a: LULC map of Betwa River basin (2008-09)

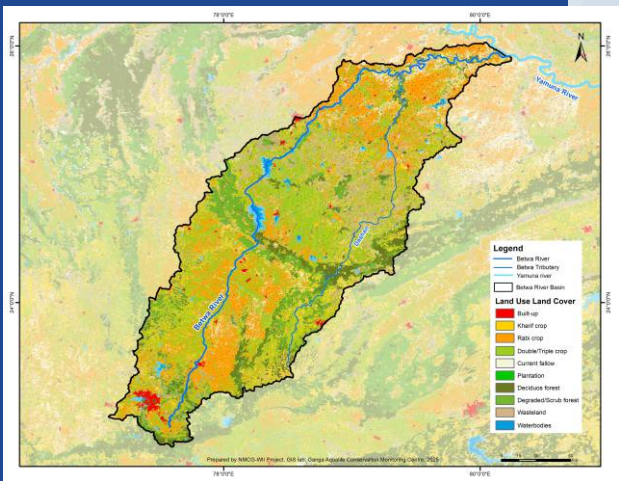


Figure 2b: LULC map of Betwa River basin (2018-19)

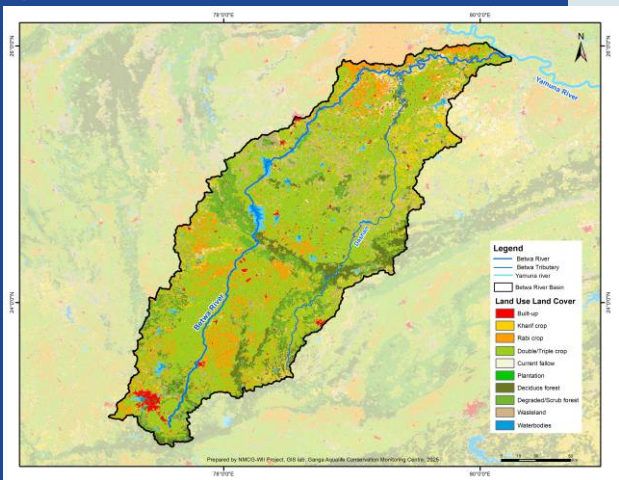
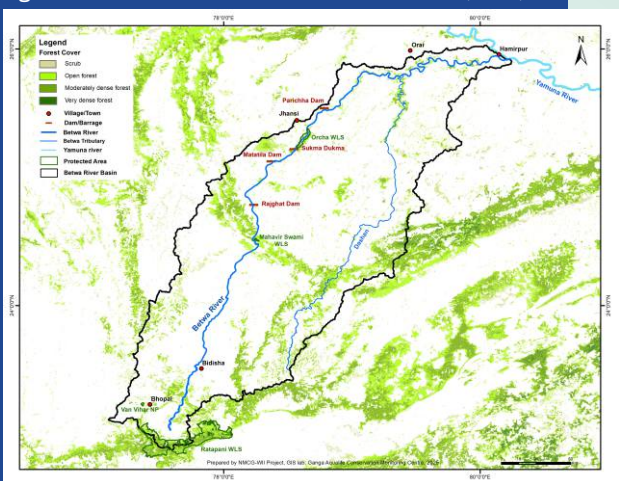
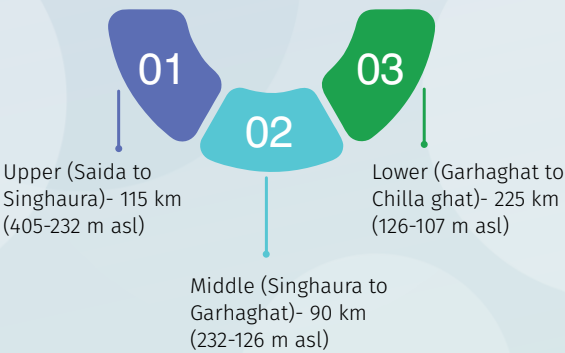


Figure 3: Forest cover of Betwa River basin (2019)



# BETWA RIVER CAN BE DIVIDED INTO THREE ZONES:



## CONSERVATION SIGNIFICANCE

### CRITICALLY ENDANGERED

#### Reptile

- Gharial *Gavialis gangeticus* (Gmelin in Linnaeus, 1789)
- Red-crowned roofed turtle *Batagur kachuga* (Gray, 1831)

### ENDANGERED

#### Mammal

- Gangetic dolphin *Platanista gangetica* (Lebeck, 1801)

#### Reptile

- Indian softshell turtle *Nilssonina gangetica* (Cuvier, 1825)

### VULNERABLE

#### Fish

- Wallago attu* (Bloch and Schneider, 1801)
- Goonch *Bagarius bagarius* (Hamilton, 1822)

#### Reptile

- Mugger *Crocodylus palustris* (Lesson, 1831)

### KEY PROTECTED AREAS

- Orchha Wildlife Sanctuary
- Mahavir Swami Wildlife Sanctuary





## DRIVERS OF RIVERSCAPE CHANGE

- Small streams created to wash the mining waste into the Gangora and Gudawal nalas drain into the Betwa River and the Rajghat Dam reservoir, increasing sediment load.
- Sand mining has led to the exposure of the underlying bedrock, resulting in fragmented, vegetated and jagged point bars.
- Habitat fragmentation caused by dams, such as Rajghat (Rani Lakshmi Bai) Dam, Matatila Dam, Sukma Dukma (Dhukwan) Dam and Parichha Dam, has created barriers to migratory fish species, including *Tor tor* and *Bagarius bagarius*. Restricted access to upstream spawning grounds may lead to genetic isolation and population decline. Additionally, dams and barrages have altered sediment and flow dynamics, resulting in riverbed erosion, unpredictable downstream flooding, and reduced flows in upstream reaches.
- The Betwa river stretch, from Mandideep to Bhojpur, has poor water quality.

## INTERESTING FACTS

- Orchha, a historical town situated on the banks of Betwa, is recognised on the Tentative List of UNESCO World Heritage Sites (officially submitted as "The Historic Ensemble of Orchha"). Founded by Rudra Pratap Singh of the Bundela dynasty in the 16<sup>th</sup> century, Orchha features a distinctive architectural style known as Bundeli, which incorporates elements of Mughal architecture. Popular buildings or structures include Orchha Fort complex, Ram Raja Temple, Chaturbhuj Temple, and two elevated minarets called Saavan and Bhadon.
- Ram Raja Temple, a 16<sup>th</sup> century temple inside the Rani Mahal in Orchha, is believed to be the only temple where Lord Ram is worshipped as a King and not a deity. Legend holds that the idol of Lord Ram brought by Queen Ganesh Kunwari, wife of King Madhukar Shah Ju Dev, from Ayodhya, became affixed at this site due to divine intervention when placed by the Queen, instead of its planned resting place at Chaturbhuj Temple.
- Rock Shelters of Bhimbetka, situated near the source of the Betwa River (Raisen district, Madhya Pradesh), in the foothills of the Vindhyan Mountains on the southern edge of the central Indian plateau, is designated as a UNESCO World Heritage Site. It consists of over 700 rock shelters with an extensive array of pictographs and petroglyphs that appear to date from the Mesolithic Period to the historical period, depicting animals like elephants, peafowl, snakes and deer.
- *Chungal Chidiya* is a mythical bird in Indian folklore, particularly in Bundelkhand, with the head of an elephant, body of a leopard, nails of a tiger, and teeth of a wild boar, and strong enough to carry seven elephants. Evidence of its imagery exists in paintings at Orchha.



National Mission for Clean Ganga,  
Ministry of Jal Shakti,  
Department of Water Resources,  
River Development and Ganga Rejuvenation,  
Major Dhyan Chand Stadium, New Delhi - 110001

### GACMC/NCRR

Ganga Aqualife Conservation  
Monitoring Centre/  
National Centre for River Research  
Wildlife Institute of India, Dehradun  
nmcg@wii.gov.in



भारतीय वन्यजीव संस्थान  
Wildlife Institute of India  
P.O. Box #18, Chandrabani  
Dehradun - 248002, Uttarakhand  
wii@wii.gov.in