

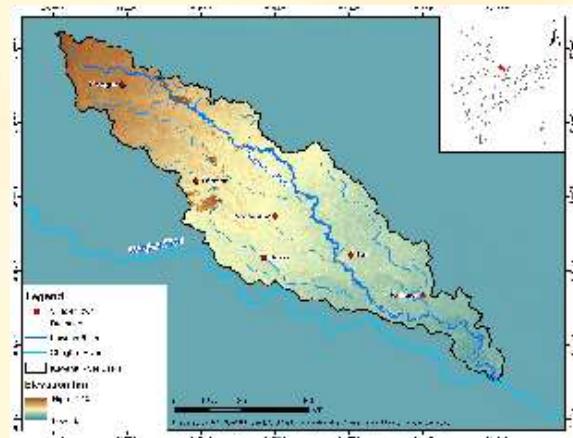


Kuwano

## GENERAL INFORMATION

- Kuwano (Kuwana or West Rapti) River, a tributary of the Ghaghra River, originates as a spring in the Terai region near Basaupur village (Bhariach District, Uttar Pradesh), and flows for approx. 391 km through the Bhariach, Balrampur, Basti, Gonda, Gorakhpur, Sant Kabir Nagar, Shravasti and Siddharthnagar districts in Uttar Pradesh.
- It joins the Ghaghra at Jiginiya Urph Shahpur village, Gorakhpur district.
- Kuwano River basin spans an area of about 5,584 km<sup>2</sup> (Figure 1).
- The basin falls under the Gangetic Plain (Upper Gangetic Plains – 7A) biogeographic zone.
- The basin experiences tropical monsoon climate, characterised by three distinct seasons, viz. hot summer, warm and humid monsoon, and mild winters.
- The river displays a meandering channel pattern typical of rivers flowing through low-gradient alluvial plains.
- Bisahi, Manorama and Kathinaya rivers are the key tributaries of the Kuwano.
- Population density along the river is 862.32 persons/km<sup>2</sup>.
- Decadal LULC transitions in the Kuwano basin (2008-09 to 2018-19) recorded an increase in area under kharif crop (15.38%) and built-up (1.73%), and a decrease in rabi crop (-8.45%), current fallow (-6.77%) and wasteland (-2.87%). Marginal to no changes were noted in double/triple crop (0.80%), waterbodies (0.18%), plantation (0.01%), deciduous forest (-0.01%), and scrub forest (nil) (Figures 2a and 2b).

Figure 1: Map of Kuwano River basin



## BIODIVERSITY VALUE

- Kuwano basin is dominated by non-forest areas (96.59%), followed by very dense forest (1.59%), open forest (1.18%), moderately dense forest (0.39%), waterbodies (0.24%) and scrubland (0.01%) (Figure 3).
- Tropical Moist Deciduous Forest type occur locally in riparian zones and remnant patches. River-adjacent lowland areas are dominated by moisture-loving species such as *Syzygium cumini* and *Barringtonia acutangula*, while relatively elevated patches retain remnants of sal (*Shorea robusta*) dominated forest. Other dominant tree species across the basin include *Mallotus philippensis*, *Terminalia elliptica*, *Bridelia retusa*, and *Streblus asper*.
- Kuwano River harbours three turtle species, viz. the Endangered Indian peacock softshell turtle (*Nilssonia hurum*), and Vulnerable Indian flapshell turtle (*Lissemys punctata*) and Indian roofed turtle (*Pangshura tecta*).
- 140 bird species (19 orders and 53 families) have been documented in the Parwati Arga Bird Sanctuary (Gonda district), a Ramsar site situated on the periphery of the basin, including the Endangered Egyptian vulture (*Neophron percnopterus*), Vulnerable common pochard (*Aythya ferina*), river tern (*Sterna aurantia*) and sarus crane (*Grus antigone*), and the Near Threatened Indian spotted eagle (*Clanga hastata*).
- 65 fish species (10 orders and 27 families) have been recorded from the river, including the Endangered wagur (*Clarias magur*), and Vulnerable *Wallago attu* and *Bagarius bagarius*.

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

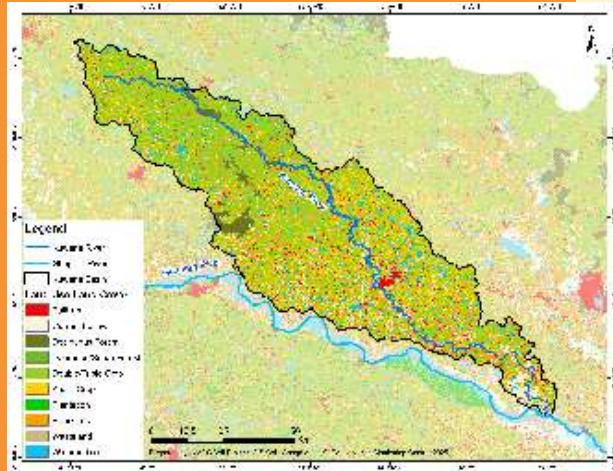


Figure 2b: LULC map of Kuwano River basin (2018-19)

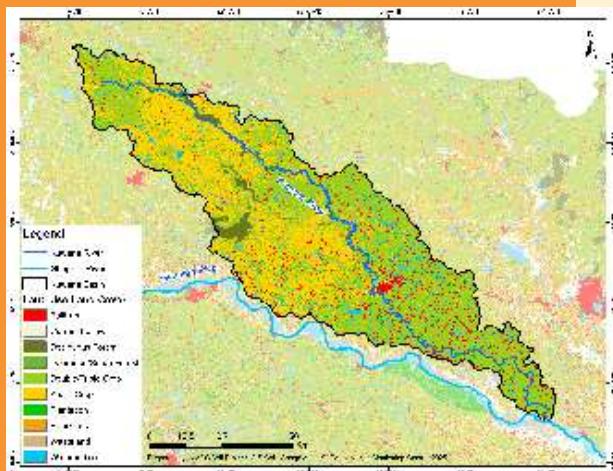
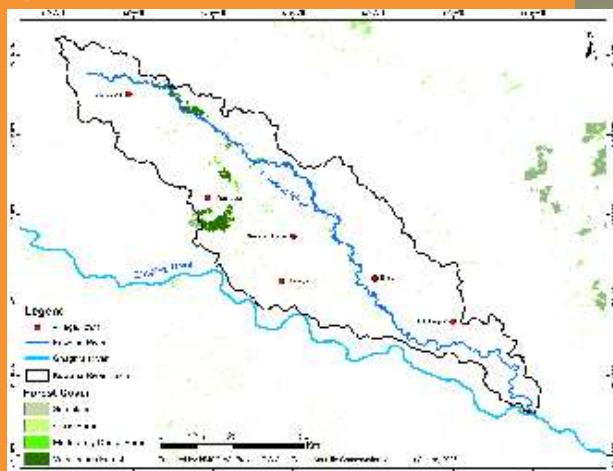


Figure 3: Forest cover of Kuwano River basin (2019)



## CONSERVATION SIGNIFICANCE

### ENDANGERED

#### Avifauna

Egyptian vulture *Neophron percnopterus* (Linnaeus, 1758)

#### Reptile

Indian peacock softshell turtle *Nilssonia hurum* (Gray, 1830)

#### Fish

Wagur *Clarias magur* (Hamilton, 1822)

### VULNERABLE

#### Avifauna

Common pochard *Aythya ferina* (Linnaeus, 1758)

River tern *Sterna aurantia* (Gray, 1831)

Sarus crane *Grus antigone* (Linnaeus, 1758)

#### Reptile

Indian flapshell turtle *Lissemys punctata* (Lacépède, 1788)

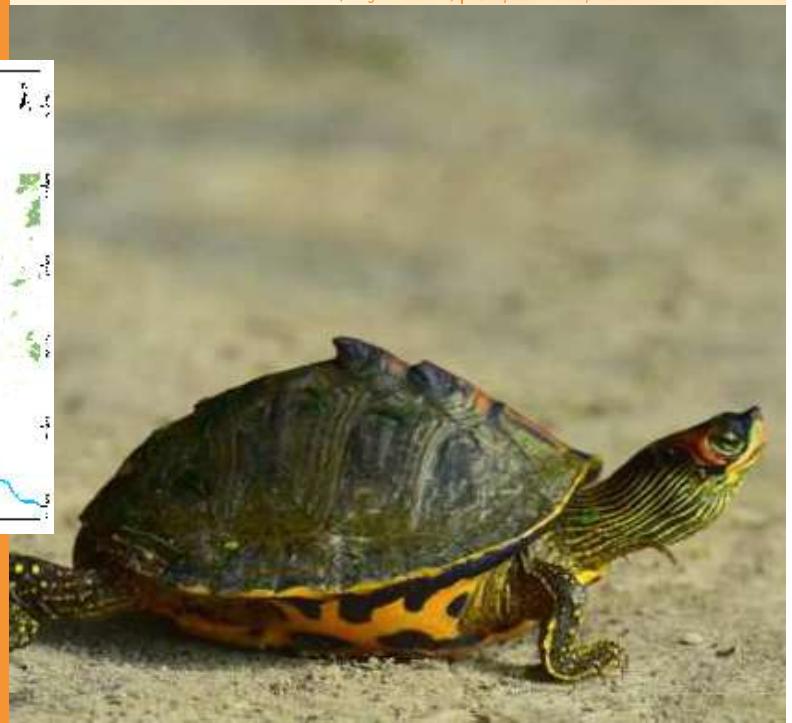
Indian roofed turtle *Pangshura tecta* (Gray, 1830)

#### Fish

Wallago attu (Bloch and Schneider, 1801)

Bagarius bagarius (Hamilton, 1822)

Indian roofed turtle (*Pangshura tecta*) | ©Deepak Mani Tripathi



## DRIVERS OF RIVERSCAPE

### CHANGE

- Kuwano basin's near-flat topography, particularly toward the Ghaghra confluence, creates high flood susceptibility during the monsoon, driving rapid channel shifts, bank erosion, elevated sediment loads, and recurrent impacts on floodplain livelihoods.
- The river traverses the Gorakhpur-Basti-Gonda region, located near the Himalayan foothills and the unstable edge of the Indo-Gangetic plains, largely within Seismic Zones III-IV, increasing susceptibility to landscape and channel adjustments.
- As the Kuwano flows through Basti and surrounding industrial clusters, it receives untreated sewage, solid waste, and effluents from small-scale industries (brassware, iron and carpentry units, brick kilns, agro-processing, footwear, soap, and candle manufacturing) as well as sugar mills, leading to significant water quality degradation and risks to human and aquatic health.
- Mukhliapur Dam (Sant Kabir Nagar district) on the Kuwano mainstem, though limited in scale, alters natural flow regimes and sediment transport, influencing downstream channel dynamics.

## INTERESTING FACTS

- Bhadreshwar Nath Temple (Basti district), located approximately 5-6 km from Basti on the banks of the Kuwano River, is a prominent Shaivite shrine. Local tradition attributes its establishment to Ravana, a devout follower of Lord Shiva and the antagonist of the *Ramayana*. The temple houses a large *Shiva Linga* (referred to as Bhadreshwar Nath) referenced in the religious text *Shiva Mahapurana*, and hosts a major fair during Mahashivratri, attracting devotees from across the state.
- The Narhan culture (c. 1300–800 BCE) represents an independent Chalcolithic tradition of the Ghaghra basin. Seventeen sites have been identified along the Kuwano River, of which Imlidih Khurd (Gorakhpur district), excavated in 1992, revealed a two-phase sequence—Pre-Narhan and Narhan—marked by mud-floor settlements with post-holes and ovens. Finds include white-painted Black-and-Red Ware pottery and low-tin bronze artefacts, indicating metallurgical knowledge. Crop remains of wheat, barley, rice, pulses, and oilseeds reflect a two-crop agricultural system, while faunal remains point to a mixed agro-pastoral economy with fishing.
- Lahiradeva, a lakeside Neolithic settlement on the banks of the Kathinaya River, represents one of the earliest centres of agriculture in the Middle Ganga Plain. Excavations have revealed domesticated rice (*Oryza sativa*) in the lowest cultural levels, alongside wild rice and foxtail millet (6<sup>th</sup>–5<sup>th</sup> millennia BCE; AMS age of c. 6409 BCE), indicating that cultivation in the region emerged during the early Holocene from long-standing hunting-gathering traditions. Thakur et al. (2021) further date rice domestication at Lahiradeva to c. 9250 BP, predating evidence from the Lower Yangtze Valley in China (c. 9000–8400 BP).



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