



GENERAL INFORMATION

- Garra River is a small left-bank tributary of the Ganga River, which originates from the Kumaon hills in the Nandhaur range near Haldwani in Uttarakhand.
- Garra covers a length of about 433 km, of which 357 km flows through Uttar Pradesh and 76 km through Uttarakhand.
- The Garra River basin covers an area of about 6795 km², of which 80.5% falls in Uttar Pradesh and 19.5% in Uttarakhand.
- Garra flows through Nandhaur Wildlife Sanctuary in Uttarakhand, where it is known as the Nandhaur. After entering the Bhabar plains in Chorgallia in Nainital District, it is known as the Deoha. Flowing southward through Lalarpatti, Sitarganj, and Khatima, it enters Uttar Pradesh in Pilibhit and traverses through Bisalpur, Shahjahanpur, Shahbad, Pali, and Sandi. The river changes its course in a southeast direction just before joining the Ganga River 10 km downstream of the Ramganga-Ganga confluence.
- Garra River flows through two biogeographic zones, the Himalaya and the Gangetic Plains and two biotic provinces, Western Himalaya (2B) and Upper Gangetic Plains (7A).
- Climate of the Garra River basin varies from sub-tropical to subhumid.
- Nanakmatta, a town named after the famous Sikh shrine Gurudwara Sri Nanak Matta Sahib, is located on the bank of the Garra.
- Devha, Khakhra, Jhabaria, Sakaria, Barah, and Rapatua are the tributaries of Garra.



ENDANGERED SPECIES

Reptiles

Indian Softshell turtle

Birds

Egyptian Vulture

KEY PROTECTED AREA

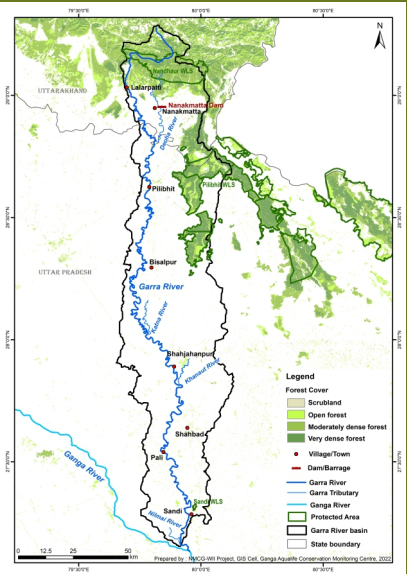
Nandhaur Wildlife Sanctuary
Pilibhit Wildlife Sanctuary
Sandi Wildlife Sanctuary

SALIENT FEATURES

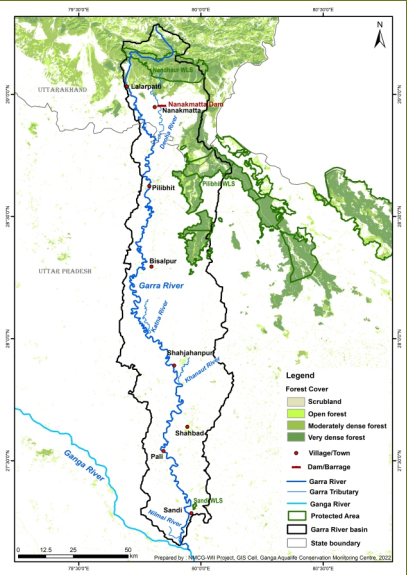
- River is highly sinuous and slightly migratory in nature and characterised by threads of abandoned channels, high meanders, presence of multiple ox-bow lakes and ponds.
- Around a 23 km stretch of Garra River flows through Nandhaur Wildlife Sanctuary and has been protected since 2012 under Section 36 A of the Wild Life (Protection) Act, 1972.
- Four major forests types dominate the Basin, moist Siwalik sal forest (3C/C2a), moist bhabar sal forest (3C/C2b), moist Tarai sal forest (3C/C2c), and west Gangetic moist mixed deciduous forest (3C/C3a).
- Vegetation of Garra River basin is represented by *Shorea robusta*, *Anogeissus latifolia*, *Terminalia tomentosa*, *Adina cordifolia*, *Pinus roxburghii*, *Lannea coromandelica*, *Garuga pinnata*, *Terminalia bellirica*, and *Diospyros tomentosa*.
- Smooth-coated otter (*Lutrogale perspicillata*) have

been reported from the Garra River basin.

- Garra supports populations of muggers and five turtle species, including the Indian roofed turtle (*Pangshura tecta*), Indian tent turtle (*Pangshura tentoria*), brown roofed turtle (*Pangshura smithii*), Indian softshell turtle (*Nilssononia gangetica*) and Indian flapshell turtle (*Lissemys punctata*).
- Egyptian vulture (*Neophron percnopterus*), painted stork (*Mycteria leucocephala*), sarus crane (*Grus antigone*), oriental darter (*Anhinga melanogaster*), and baya weaver (*Ploceus philippinus*) are some of the commonly occurring birds in the Basin.
- A total of 34 fish species belonging to 26 genera and 15 families, including silver carp (*Hypophthalmichthys molitrix*) and butter catfish (*Ompok bimaculatus*) have been reported from the Garra River in the Pilibhit District of Uttar Pradesh.
- Garra River basin supports a human population of 34.42 lakh people, of which 28.35 lakh are in Uttar Pradesh and 6.07 lakh in Uttarakhand.



Forest cover in 2015



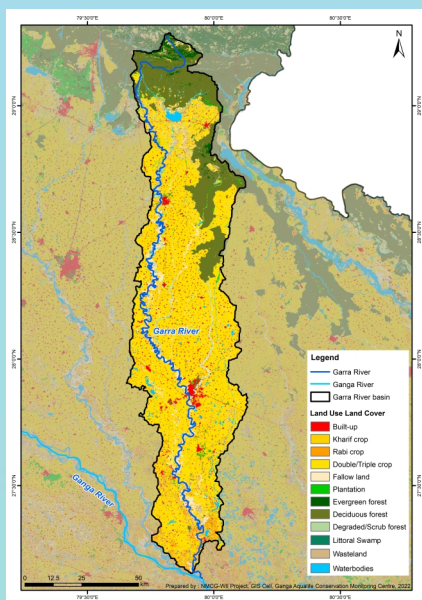
Forest cover in 2019

FOREST COVER

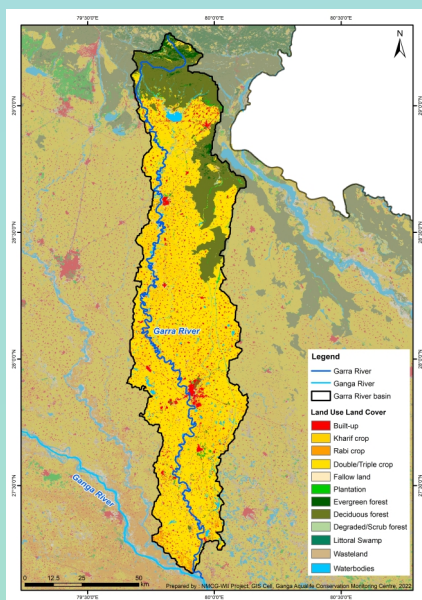
Catchment of the Garra River is dominated by non-forest area, followed by moderately dense forest, very dense forest, open forest, and scrubland.

LAND USE AND LAND COVER CHANGE

Land Use and Land Cover maps (2008-09 & 2018-19) revealed that over a period of ten years, there was an increase in the Kharif crop (5%), double/triple crop (2.17%) and built-up area (1.01%); and a decrease in the fallow land (5.3%), wasteland (2.49%) and rabi crop area (0.53%).



LULC map of 2008-09



LULC map of 2018-19



DAMS AND BARRAGES

- Nanak Sagar dam is the only dam in the Garra River basin that was built in 1962 on the Deoha River in the Udham Singh Nagar district of Uttarakhand.
- Dam was built to create the Nanak Sagar reservoir to supply water for irrigation and domestic purpose in Uttarakhand and parts of Uttar Pradesh.
- With a 19.7 km length and $3833 \times 10^3 \text{ m}^3$ volume, the dam has an irrigation potential of 39200 hectares.

DRIVERS OF RIVERSCAPE CHANGE

- Discharge of untreated effluent from the industries such as sugar mills, paper & pulp and thermal power plants into the river deteriorates the water quality and makes it unsuitable for aquatic fauna.
- Agricultural runoff is one of the major sources of pollution in the Garra River.
- Untreated sewage discharges into the river due to rapid urbanisation and changing land use patterns have been affecting the water quality and aquatic fauna's riverine habitat.



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

GACMC

GANGA AQUALIFE CONSERVATION MONITORING CENTRE

P.O. Box # 18, Chandrabani
Dehradun - 248002, Uttarakhand



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

P.O. Box # 18, Chandrabani
Dehradun - 248002, Uttarakhand
wii@wii.gov.in