



AND THE

RIVER

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— ASSESSMENT OF THE —
ECOLOGICAL STATUS OF
SELECT INDIAN RIVERS FOR
CONSERVATION PLANNING

NRCD AND WII INITIATIVE

The National River Conservation Directorate (NRCD), formerly under the Ministry of Environment, Forests and Climate Change is now a part of the Ministry of Jal Shakti. The NRCD is implementing the Centrally Sponsored Schemes of National Conservation Plan (NRCP) and National Plan for Conservation of Aquatic Ecosystems (NPCA) for conservation of rivers, lakes and wetlands in the country. Earlier the activities of NRCD were dedicated towards pollution abatement. Considering the successful model of river conservation, demonstrated by the Wildlife Institute of India (WII), Dehra Dun, under the Namami Gange programme, NRCD has now amalgamated biodiversity conservation and community participation in the conservation process. NRCD has taken up a Nation-wide river conservation project, and the rivers Cauvery, Godavari, Periyar, Mahanadi and Narmada were taken as priority rivers as suggested by His Excellency Ram Nath Kovind, President of India, in the Parliament.

NRCD identified WII as a nodal agency and entrusted this initiative and six rivers viz., Narmada, Mahanadi, Godavari, Cauvery, Periyar and Barak were selected.

AND THE RIVER

The project “Assessment of the ecological status of select Indian rivers for conservation planning” by the Wildlife Institute of India, in the first phase, aims to spearhead river conservation in identified Indian rivers for biodiversity conservation. Intensive ecological studies will be carried out in the six river basins of India and ecological status will be assessed. Conservation institutions/ organizations working in the respective regions will be identified according to their expertise and capacity will be enhanced to engage them in long term networking and conservation planning. Latest methodologies and tools available to science will be used to achieve the project objectives.

1 Prepare biodiversity profile of the identified rivers to derive the current status and identify direct and indirect drivers affecting the integrity of these rivers.

2 Assess the concentration of key pollutants such as micro- and macro- plastics, pesticides, heavy metals and other endocrine disruptive substances (EDSs) in identified rivers and bioaccumulation in species of conservation concern.

3 Derive the current trend in genetic variability and gene flow of identified species which might have been disrupted due to river fragmentation.

4 Identify conservation priority zones and prepare conservation action plan for select stretches to minimize the negative impact of the direct and indirect drivers on river ecosystem processes.

5 Identify, prioritize and enhance capacity of the regional institutions/ organization for long term involvement in river conservation.

6 Strengthen the existing Ganga Aqua Labs at WII to cater to the requirements of other Indian rivers for conservation planning and information dissemination.

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The select rivers are representative of four biogeographic regions of India and have significant biological and ecosystem service values. Some of these rivers such as Mahanadi, Cauvery are highly modified, so is the Periyar River which still has high biodiversity value, especially in the headwaters.

Among these, one of the most biodiverse rivers, Barak has also been selected for initial assessment due to its transboundary values. Most of these rivers are interstate and hence they have water sharing issues which needs to be addressed for sustained flow of ecosystem services. Ecological assessment of these rivers will be rapid which will aid in conservation planning and for developing suitable ameliorative measures for their restoration, while addressing water security issues at basin level.

The project will lead to enhanced understanding of the occurrence and distribution of aquatic species of conservation concern, hydrology regime, extent of morphological alteration, extent of anthropogenic influence, and concentration of key pollutants in these rivers. The findings of the project will pave path for initiating systematic conservation for the identified rivers in the next phase. The existing Ganga Aqua Labs at WII will be strengthened to cater to the requirements of other Indian rivers for conservation planning and information dissemination.

THE BARAK RIVER

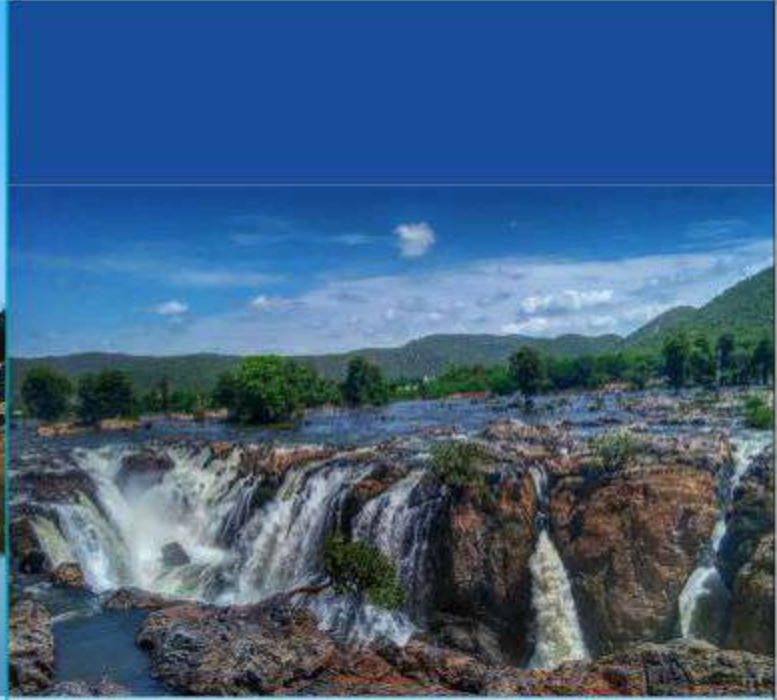


The Barak River originates in Liyai Kullen Village, Manipur, traverses about 564 km and joins Meghna river in Bangladesh. An important trans-boundary river, Barak has high endemism and species like *Schistura chinduinica*, *Sisor barakensis*, *Garra manipurensis* are found only in Barak River and its tributaries. The Gangetic dolphin (*Platanista gangetica*) and smooth coated otter (*Lutrogale perspicillata*) are key aquatic species of the basin. The aquatic biota is vulnerable to unsustainable fishing, sand mining, occasional poaching and pollution.

Gangetic dolphin
(*Platanista gangetica*)



THE CAUVERY RIVER



The Cauvery river also known as Dakshin Ganga, originates from Talacauvery in Western Ghats, flows for 805 km and merges with Bay of Bengal. The river is having high endemism for fish fauna. Species like *Neolissachilus bovanicus*, *Hemibagrus punctatus*, *Tor remadevii*, *Hypselobarbus dubius* are endemic to the Cauvery river basin. The Indian flapshell turtles (*Lissemys punctata*) and mugger (*Crocodylus palustris*) are the key aquatic fauna of the river system. The aquatic biota is threatened by construction of dam, reduced flow of water and aquatic pollution.

Asian giant softshell turtle
(*Pelochelys cantorii*)



THE MAHANADI RIVER



The Mahanadi River originates from Pharsiya village of Dhamtiri district in Chattisgarh, flows for 850 km and merges with Bay of Bengal. The river passes through the Deccan Peninsula, Gangetic Plain and Coastal biogeographic zone. The major aquatic fauna found in the river are the Gangetic dolphin (*Platanista gangetica*), smooth coated otter (*Lutrogale perspicillata*), mugger (*Crocodylus palustris*) and gharial (*Gavialis gangeticus*). The river habitat is threatened by construction of dam, reduced flow of water aquatic pollution and industrial discharges.

Irrawady dolphin
(*Orcaella brevirostris*)



THE GODAVARI RIVER



The Godavari River is the second longest river in the Indian sub-continent, it emerges from Brahmagiri hills in Maharashtra and flows for 1465 km before merging at the Bay of Bengal. The river nurtures key aquatic species like smooth coated otter (*Lutrogale perspicillata*), Deccan labeo (*Labeo potail*), Dharna barb (*Puntius fraseri*). The construction of dams on Godavari River has resulted in retention of sediments and abstraction of water flow. The river is highly fragmented and characterized by discontinuity in distribution of species.

Leith's softshell turtle
(*Nilssonia leithii*)



THE NARMADA RIVER



THE PERIYAR RIVER



The Narmada River originates from Amarkantak plateau in Annupur district Madhya Pradesh, and flows through Deccan Peninsula biogeographic zones. The river is the fifth longest river of India and flows for 1312 km before joining the Arabian Sea. The major aquatic species of the basin are smooth coated otter (*Lutrogale perspicillata*), mugger (*Crocodylus palustris*), Tor mahseer (*Tor tor*). The river system is threatened by construction of dams, habitat fragmentation and aquatic pollution.

The Periyar River originates from the Sivagiri group of hills and travels for 244 km before falling into the Arabian Sea near Cochin. The river shows high endemism of different faunal species. The fish species like *Lepidopygopsis typus*, *Crassocheilus periyarensis*, *Nemacheilus periyarensis* and *Nemacheilus menomi* are endemic to the Periyar river. Herpetofauna species like *Calotes ellioti*, *Mabuya carinata*, *Nasikabatrachus sahyadrensis*, *Rana temporalis*, *Nyctibatrachus major* are endemic to the river basin. As a major source of water and fish resources, the river habitat and biota are vulnerable to construction of dam, reduced water flow, unsustainable resource extraction and non-point source of pollution.

Zig zag eel
(*Mastacembelus armatus*)



(*Mesonoemacheilus periyarensis*)



RIVER RESTORATION IN INDIA & ROLE OF WILDLIFE INSTITUTE OF INDIA

River restoration programme in India was initiated with the Ganga Action Plan (GAP) in 1985, which was later expanded to cover other rivers under the National River Conservation Plan (NRCP). The NRCP is implemented for rivers, lakes and wetlands by the National River Conservation Directorate (NRCD) of the Ministry of Jal Shakti. The Ministry of Jal Shakti through the National Mission for Clean Ganga (NMCG) is addressing the challenges posed to the Ganga River in a comprehensive manner. Under this initiative, a science-based aquatic species restoration plan is being developed through the Wildlife Institute of India's – Biodiversity conservation and Ganga rejuvenation initiative. At the end of its first phase, the project has yielded significant scientific outcomes for aquatic biodiversity conservation in the mainstem Ganga River and has garnered stakeholders' support. In its second phase, this initiative has been extended to the basin level, spearheading river conservation and management throughout the Ganga basin.



After the success of phase I of the “Biodiversity Conservation and Ganga Rejuvenation” initiative, it was suggested to replicate the model for the select Indian rivers. Thus, the Wildlife Institute of India was given the task to spearhead the biodiversity conservation of select Indian rivers as an umbrella agency, under the aegis of National River Conservation Directorate.

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Barak River image

<https://i.pinimg.com/564x/ec/21/0c/ec210c01e8352cee5e5450024a6e2858.jpg>

Cauvery River

<https://pictures.trodly.com/image/activity/2480/size-780x370/mode-crop/5c10de59e1d80.jpg>

Godavari River

http://www.bbrindia.co.in/sites/default/files/imagecache/projects_thumbnail/Rail-Road_bridge_Godavari.JPG

Mahanadi River

https://live.staticflickr.com/6090/6152650452_c8e6fc0f36.jpg

Narmada River

http://cdn.coverstand.com/45852/461979/article_assets/85e0bce415aab43f9010ec7af007fb981327334f.jpg

Periyar River

<https://indiaandbeyond.com.au/wp-content/uploads/2017/01/periya-wildlife-sanctuary-1.jpg>