

# FISH SPAWN PROSPECTING OF RIVER GANGA 1960 TO 2020



National Mission for  
Clean Ganga



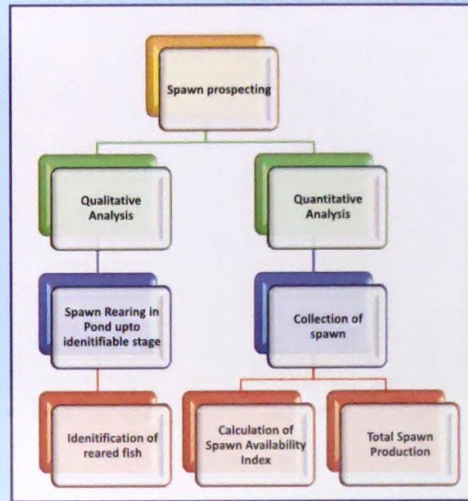
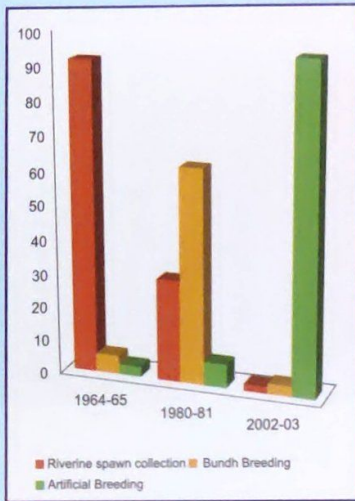
CIFRI

**ICAR-CENTRAL INLAND FISHERIES RESEARCH INSTITUTE**  
BARRACKPORE, KOLKATA-700 120  
WEST BENGAL, INDIA



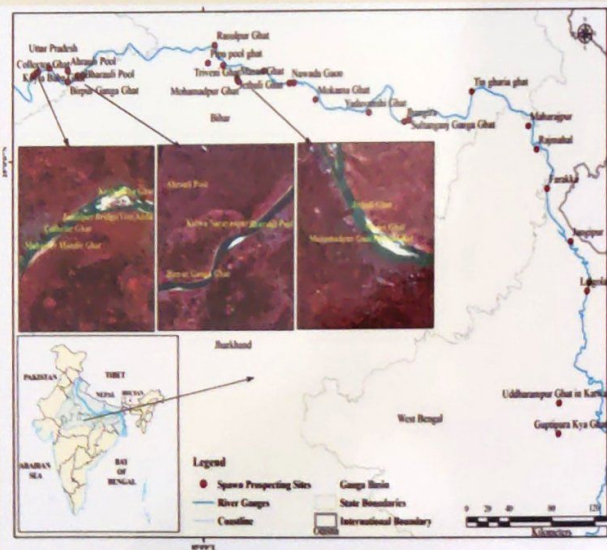
## Background

The basin of river Ganga drains about 1,060,000 sq. km areas with the length of 2,550 km supports the population of 600 million people. River are always considered as a traditional source of fish seed collection (Fertilized eggs, spawn, fry and fingerlings) for aquaculture purpose in which river Ganga contributed 89.5% of the total fish seed produced during 1964 and was considered as the home of the Indian Major Carps which is decreasing continuously.



## Selection of site are based on

- Previous survey carried out by ICAR-CIFRI during 1960's.
- Pre monsoon survey conducted to ensure the previous collection sites and selection of new sites.
- Based on the interaction with local fisherman and fisheries officials of different states.



## Quantitative Analysis

Quantitative analysis was carried out to know the spawn availability index and to estimate the total spawn production in the river Ganga.

## Spawn collection

Spawn is being collected using a specialized bag net called "shooting net".

## Description of Net

- Single walled synthetic (nylon) type nets with tail piece (Gamcha).
- The water depth to operate such net varies with places and ranged from 2.5-10.2 ft.
- Nets are operated individually, or in series with a distance of 10-15ft between two nets.

Length of net (cm)	Width of net (cm)	Ring dia. (cm)	Depth of operation (ft)	Nos. of bamboo used
280-660	240-564	17-24	2.5-10.2	7-9





Shooting net for egg collection



Hapa for storage of spawn



Shooting net operated in series

### Short Term Storage of Spawn



Storage in Hapa



Storage in earthen pit



Storage in earthen utensils

### Different spawn measurement cups



Brass Cup



Glass Cup



Steel Cup



Aluminium Cup

### Different spawn transportation technique



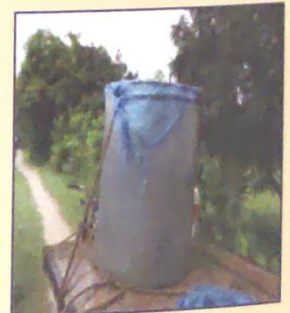
Packing of spawn with turbid river water



Packed seed transport to bank



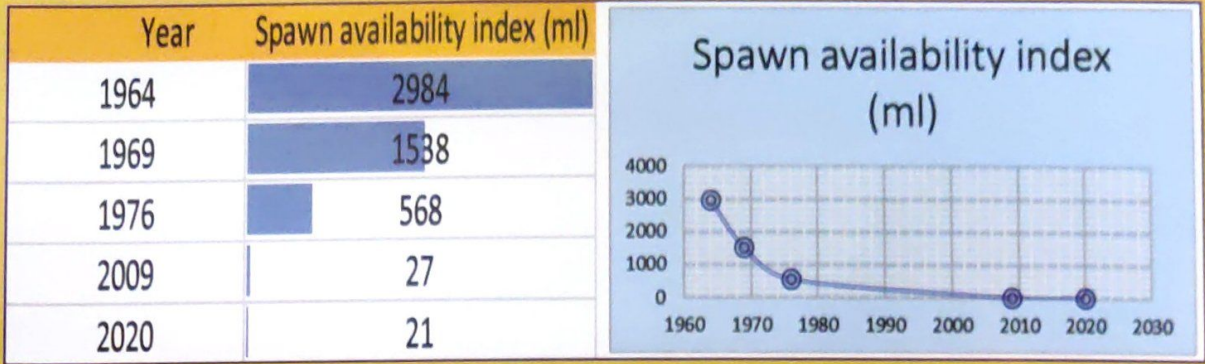
Spawn transportation with oxygen



Spawn transportation in aluminium handi



## Result



## Qualitative Analysis

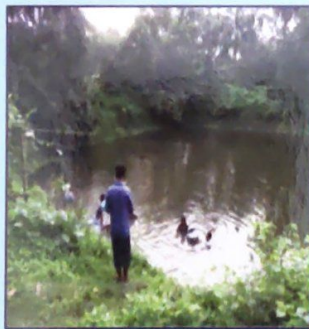
As it is very difficult to identify the spawn up to species level, so they are reared up to identifiable size.

### REARING OF FISH SPAWN FOR QUALITATIVE ANALYSIS

- The collected riverine spawn was reared and raised up to identifiable size -
- Spawn were reared in :-
- Nursery Pond
- Cemented Tank
- FRP Tanks
- Grading of the seed: 3 days in tanks 7 days in earthen pond to avoid Cannibalism.



Rearing in CIFRI fry rearing unit



Rearing in Pond



Rearing in cemented tank



Rearing in FRP tanks

### Different type of feed used for rearing of riverine spawn up to satiation level

#### For 3-7 days

- Glucose powder
- Mixture of milk powder and egg custard.
- Infusoria
- Tubifex and subsequently weaned to artificial diet.

#### 7 days onwards

- Mixed Zooplankton
- Artemia naupli
- Chopped Tubefex
- Commercial Feed (Powder, crumble to 1.0 mm)





Commercial feed



Culture of *Artemia nauplii*

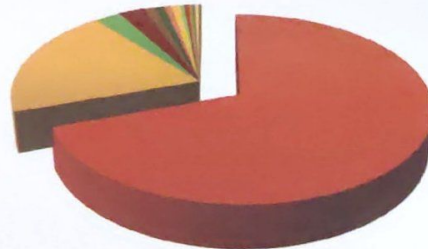


Mixture of egg yolk with milk powder

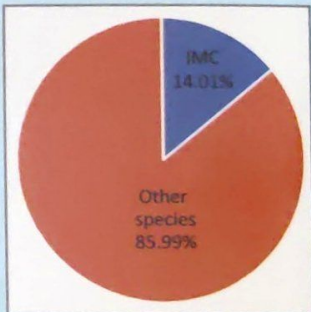
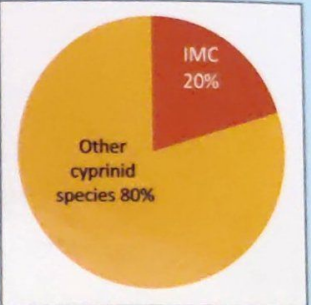


*Tubifex sp.*

### Family wise distribution of reared fishes



- |                |                    |                   |                 |
|----------------|--------------------|-------------------|-----------------|
| ■ Cyprinidae   | ■ Ambassidae       | ■ Siluridae       | ■ Bagridae      |
| ■ Mugilidae    | ■ Clupeidae        | ■ Mastacembelidae | ■ Notopteridae  |
| ■ Ophichthidae | ■ Channidae        | ■ Osphronemidae   | ■ Aplocheilidae |
| ■ Schilbeidae  | ■ Loricariidae     | ■ Gobiidae        | ■ Engraulidae   |
| ■ Sisoridae    | ■ Heteropneustidae | ■ Pangasiidae     |                 |



From all the reared fish a total of 46 fish species belonged to 36 genera, 19 families and 8 orders were recorded. Major contribution was from Cyprinidae (68.32 %) and Ambassidae (19.48 %). The contribution of Indian Major Carp was 14.01 % among all the species while it was 20 % among all the cyprinidae.

### Percentage contribution of different family of fishes





## Salient observations: -

- Spawn collection is need based now a days.
- Flood has a positive impact on spawn availability. The bulk appearance during first two floods in the peak season.
- Spawn production reaches maximum when the river water appears a reddish tinge (turbid/red) in colour owing to the addition of water of tributaries. (Yamuna, Kosi, Gomti and Ajay).
- The recent fall in spawn abundance in Ganga coupled with the population fall of major carps in the upper and middle stretches
- As per the previous study spawn collection was carried out during the month of May to September 2019 but present it is found during July-Aug.
- There is reduction in both qualitative and quantitative spawn in river Ganga.

## Threats to fishes of Ganga

- Construction of large dam, barrages and hydropower projects
- Increase in temperature
- Changing pattern of rainfall
- Severely altered river flows,
- Fragmentation of hydrological connectivity between rivers and wetlands
- Riverfront encroachment,
- Alarming levels of pollution,
- Rampant sand mining
- Unregulated overexploitation of fish resources.
- Industrial effluents
- Agricultural discharge

## Future steps can be taken

- Closed fishing season
- Mesh size regulation
- Identification of breeding zone, deep pools and declaration of sanctuaries as a part of in situ conservation
- Ranching of IMC in different depleted stretches as a part of ex situ conservation



Prepared by :

**B. K. Das, H. S. Swain, M. H. Ramteke, N. K. Tiwari, S. Das Gupta, A. Ray,  
A. Roy Choudhury, L. Chakraborty, S. Mondal & K. Mondal**

Published by:

**Director, ICAR-Central Inland Fisheries Research Institute**

Barrackpore, Kolkata-700 120, West Bengal

E-mail : [director.cifri@icar.gov.in](mailto:director.cifri@icar.gov.in), [director.cifri@gmail.com](mailto:director.cifri@gmail.com); Web: [www.cifri.res.in](http://www.cifri.res.in),

Contact:- 033 2592 1190, 2592 0177; Fax: 033 25450997

Acknowledgement :

**National Mission for Clean Ganga**

Ministry of Jal Shakti (Department of Water Resources, River Development & Ganga Rejuvenation)

Govt. of India

No: CIFRI/Pamphlet/2020/06

