

RIVERINE FISH SEED COLLECTION AND TRANSPORT

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INTRODUCTION

- The diverse geographical and climatic condition of India are reflected in the riverine resources of our country.
- The different riverine system of country, depending upon their individual ecological conditions such as gradient, terrain, flow, depth, temperature, substrate etc. display a great degree of radiation in the context of distribution and abundance of their fish fauna and fish seed collection.
- Requirements of quality fish seed are increasing fast as more and more water is brought under cultivation.
- According to an estimation of CIFRI, 9500 crore of spawn are required/year to stock the available water area for fish culture.

Classification of Fish Seed

Fish seed are named according to their age and stages which is shown in the table.

Sl. No.	Name	Size (mm)
1.	Spawn/hatchling larvae	5 – 15
2.	Early fry	15 – 25
3.	Fry	26 – 40
4.	Advance fry	41 – 60
5.	Early fingerling	61 – 80
6.	Fingerlings	81 – 100
7.	Advance fingerlings	101 – 125
8.	Juveniles	126 – 150
9.	Yearlings	151 – 200

Fish Seed Collection

- Because of the enormous size of rivers and their tributaries, it proves a great potential and promises for collection of the fish seed.
- It is still the classical method in vogue in China and other Asian countries for seed collection.
- A large no. of fish seed collection centers have been located at various places on the banks of three important riverine system i.e. Ganges, Brahmaputra and Indus.
- The total length of river along with its tributaries is about 27,000 km. Bihar and West Bengal itself constitute 90% of the total traditional riverine resources.

Ganga Riverine System

The river Ganga covers the states of Haryana, Delhi, U.P., M.P., Bihar and West Bengal.

The fish seeds are usually collected in the form of egg, spawn, fry and fingerlings. Ganga riverine seed collection centre constitute about 89.5% of the total fish seed production in country.

i. Egg Collection: When the breeding ground is located, it is easily collected and scooped out from mosquito netting of varying sizes. But known breeding grounds are not easily accessible, they are collected from immediate vicinity of breeding ground.

Ganga Riverine System

- ii. **Spawn collection:** In commercial sense, spawn collection is prevalent in Bihar, W.B. and U.P. Nearly 75 spawn collection centres are registered on the river Ganga, Yamuna, Betwa, Gomati, Ramganga, Rapti, Gahaghara and few other streams.
- iii. **Fry and fingerling collection:** The established fry and fingerling collection centres are on the river Yamuna, Subernrekha in M.P., Sarjoo and Chopan. The collection is usually done by cast and drag net.

Brahmaputra Riverine System

- It drains state of Assam, Nagaland and Tripura.
- There are several spawn collection centers of major carps in the system as Darrang (Gopal Para district), Khanamukh and Bamandih (Kamrup district) etc.

Indus Riverine System

- Out of 5, now only a small portion of Beas and Satlaj and their tributaries are present in India.
- Rest is the part of Pakistan.
- It covers the states of H.P., Punjab and Haryana.
- In this system fry and fingerlings are collected.

Narmada & Tapti River System

- The Indian major carps constitute 20 – 25% of total spawn collection from Narmada River in M.P. Narmada is exploited for Mahseer seed collection.
- In Tapti riverine system two important spawn collection centres have been recorded by CIFRI in Bodhan and Kathor in Surat district of Gujrat specially for *Catla* & *Labeo rohita*

The Mahanadi River System

- Mahanadi is the largest river of Orissa. Here spawn of all major carps are collected.
- Spawn collection centres are also located by State Fishery Department of Orissa, present on rivers Mahanadi, Brahmani, Daya and Subernrekha etc.
- In addition to all the above mentioned riverine systems, fry and fingerlings are also collected from the **Godavari & Krishna Riverine system** as well as from the **Cauvery River System**.

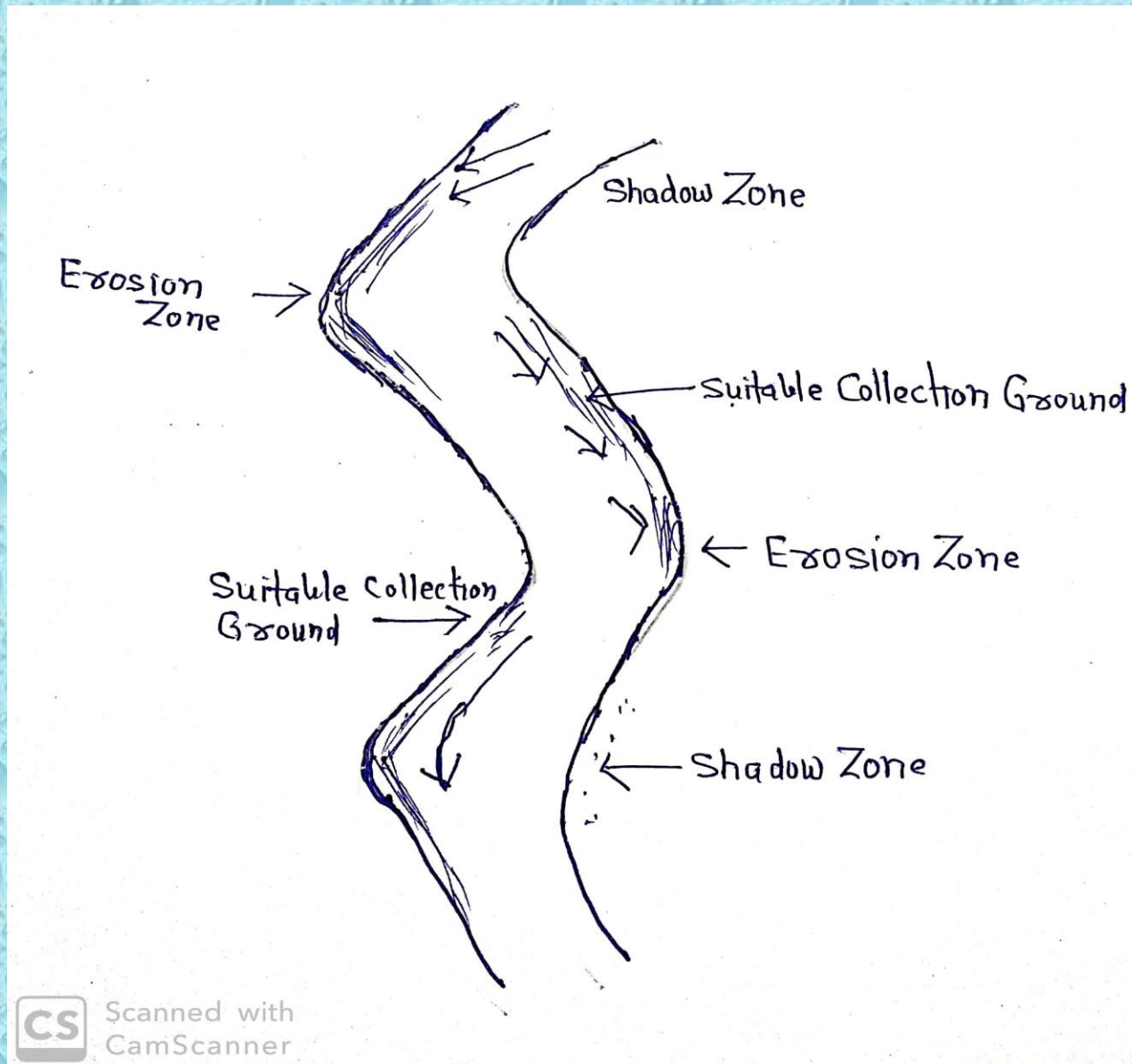
Fish Seed Collection Techniques

(a) Selection of Spawn collection Site:

A pre-monsoon survey is necessary for the selection of spawn collection in a river for ascertaining:

- i. The topography of terrain and bank feature at and in the vicinity of a site to determine the existence of operational area expected to be available in different the existence of operational are expected to be available in different floods for operation of different nets.
- ii. The topography of dry beds.
- iii. The distribution and composition of fish fauna in the selected stretch of river resident or immigrant for accessing the abundance of major carps during the monsoon season.
- iv. The location of tributaries, rivulets and nallas along with the confluences with the main river.
- v. The identity and accessibility of site.
- vi. **In a serpentine river, site near the shadow zone is the suitable spawn collection ground (Figure 1)**

Figure. Spawn Collection Sites in Rivers



Fish Seed Collection Techniques

(b) Gears used for collection of spawn/Fish Seed

- The chief gear used for spawn collection is 'shooting net'.
- It is usually funnel shaped made up of net of finely woven netting or cheap coarse cloth.
- The length of net is 10 – 22 feet and both the ends are open.
- At the one end of net, there is usually a stitched in rings of split bamboo or cone and during operation a long piece of cloth is attached to it, called as 'gamacha'.

Fish Seed Collection Techniques

(c) Methods of Operation

- For the collection of fish seed, although various types of shooting nets are used, but 1/8" meshed Midnapore type net proved to be most effective net in all the environmental conditions than the U.P., Bihar, Punjab and Maharashtra nets.
- It is relatively more effective in faster current and low turbidity. Ghosh et al (1973) adopted a specially designed net called as "Cod-end Covered net".
- The covers for 1/8" and 1/12" meshed nets bears 1/16" and 1/24" meshed nets respectively.

Segregation and identification of fish seed from riverine resource

- The collection of fish seed from riverine sources are very economical but one of the serious drawback is the identification and segregation of desired species.
- In various ways, the identification of spawn and fry of desired species is done which are:
 - i. **Visual Identification** – layer of water occupied, manner of swimming, body proportion, size of eyes, shape, size and situation of fins, presence of color.
 - ii. With the aid of microscopic examination.
 - iii. With the aid of differential DO requirements.
- Hence, it can be said that riverine fish seed resources supply nearly 85% of the total seed collection in India.
- **Midnapore net (shooting net)** is the best for collection of fish seed from different states of out country.

Suggested Readings

1. Jhingran VG (1982). Fish and Fisheries of India . Hindustan Publishing Corp. Delhi.
2. Khanna SS (1970) . An Introduction to Fishes. Central Book Depot. Allahabad, India
3. Pandey K and Shukla JP (2012). Fish and Fisheries. Rastogi Publications, Meerut.
4. Gupta SK and Gupta PC (2010). General and Applied Ichthyology. S Chand & Company Ltd. New Delhi

Thanks