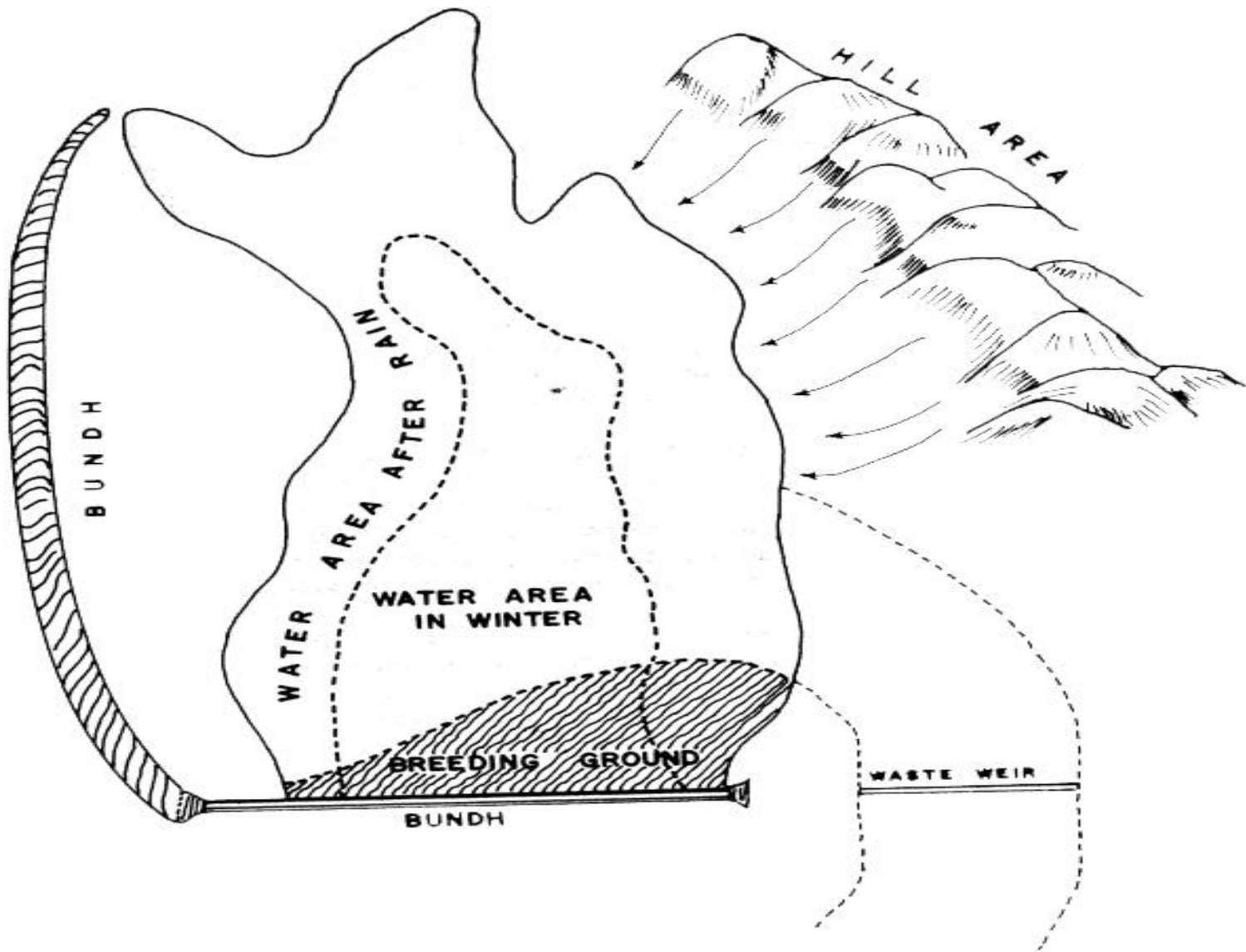


# **METHODS OF BREEDING OF CARPS IN BUNDHS**

# DRY BUNDH

- Bundhs - special type of tanks or impoundments where riverine conditions are simulated during monsoon months for breeding carps
- May be perennial (wet bundhs) or seasonal (dry bundhs)
- Bundh breeding, which accounted for 5.4% in 1964-65, contributed to about 63% in 1980



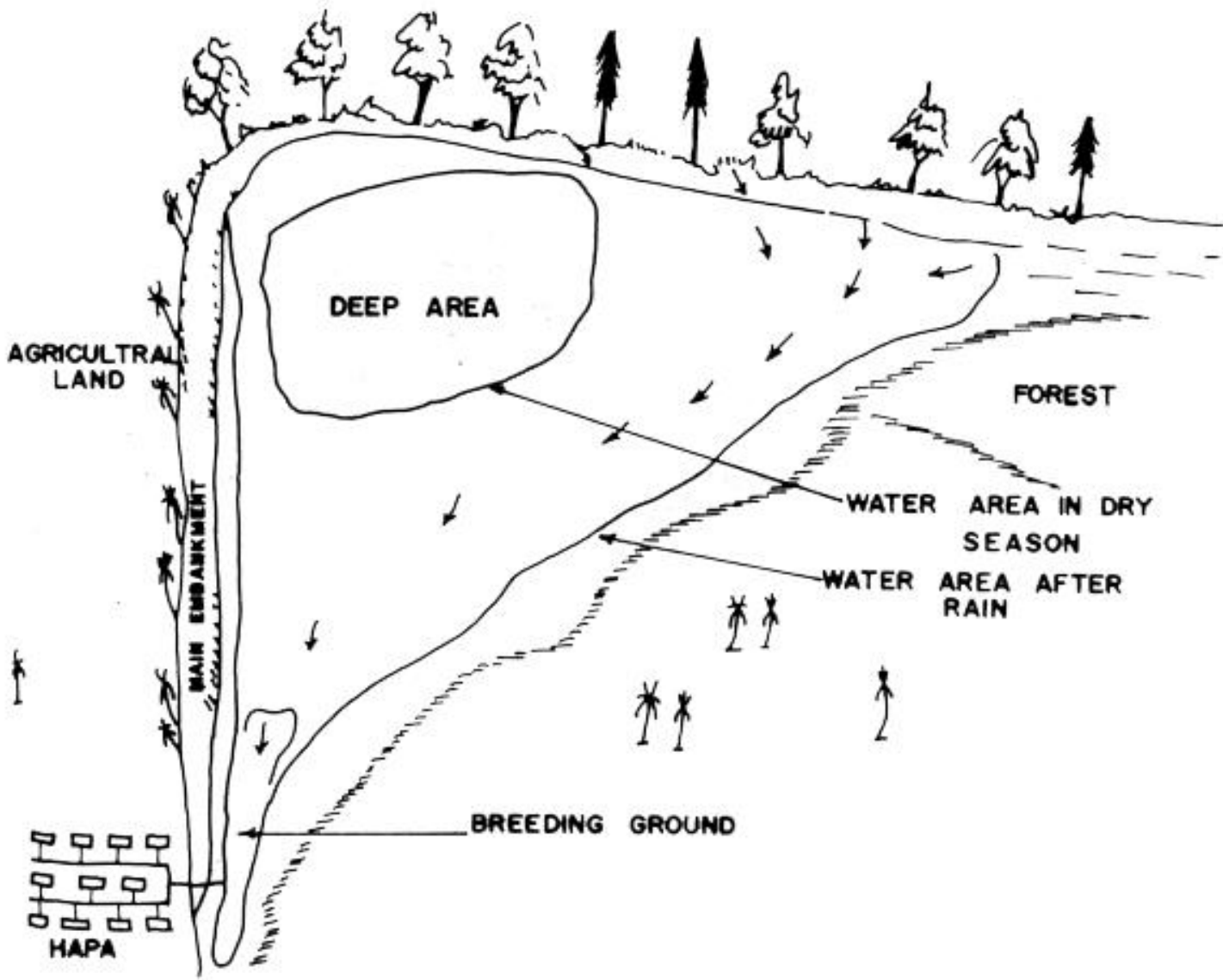
- Popular in Madhya Pradesh and West Bengal
- Bundh breeding-origin in Bengal
- Majority of bundh-major carps are known to breed, are located in the districts of Midnapore and Bankura (West Bengal) and Nowgong in the Chhattarpur district
- (Madhya Pradesh)
- First dry bundh - Sonar Talliya in Nowgong district of Madhya Pradesh

- The most modern constructions are generally masonry structures with arrangements for a sluice gate in the deepest portion of bundh for complete draining and one or two waste weirs for overflow of excess water
- A dry bundh unit consists of storage ponds for stocking breeders, an observation tower with arrangements for storing necessary equipment and a set of cemented hatcheries (2.4m x 1.2m x 0.3m) with a regular supply of water for a large number of eggs at a short time
- In some cases, the embankment is a *pucca* stone masonry with a small sluice gate and a portion of the embankment itself serves as the waste weir (Dubey, 1969)

## Wet bundh

- Wet bundh of Midnapore (West Bengal) - perennial pond or tank, situated in the slope of a vast catchment area of undulating terrain, with proper embankments having an inlet towards the upland and an outlet towards the opposite lower end
- During summer, only the deeper portion of the bundh retains water where carp breeders are released for spawning
- The remaining portion is dry - used for agricultural purposes
- After a heavy shower, a major portion of the bundh gets submerged with water from catchment area (catchment area: bundh, 20-100: 1), coming into it in the form of streamlets

# WET BUNDH



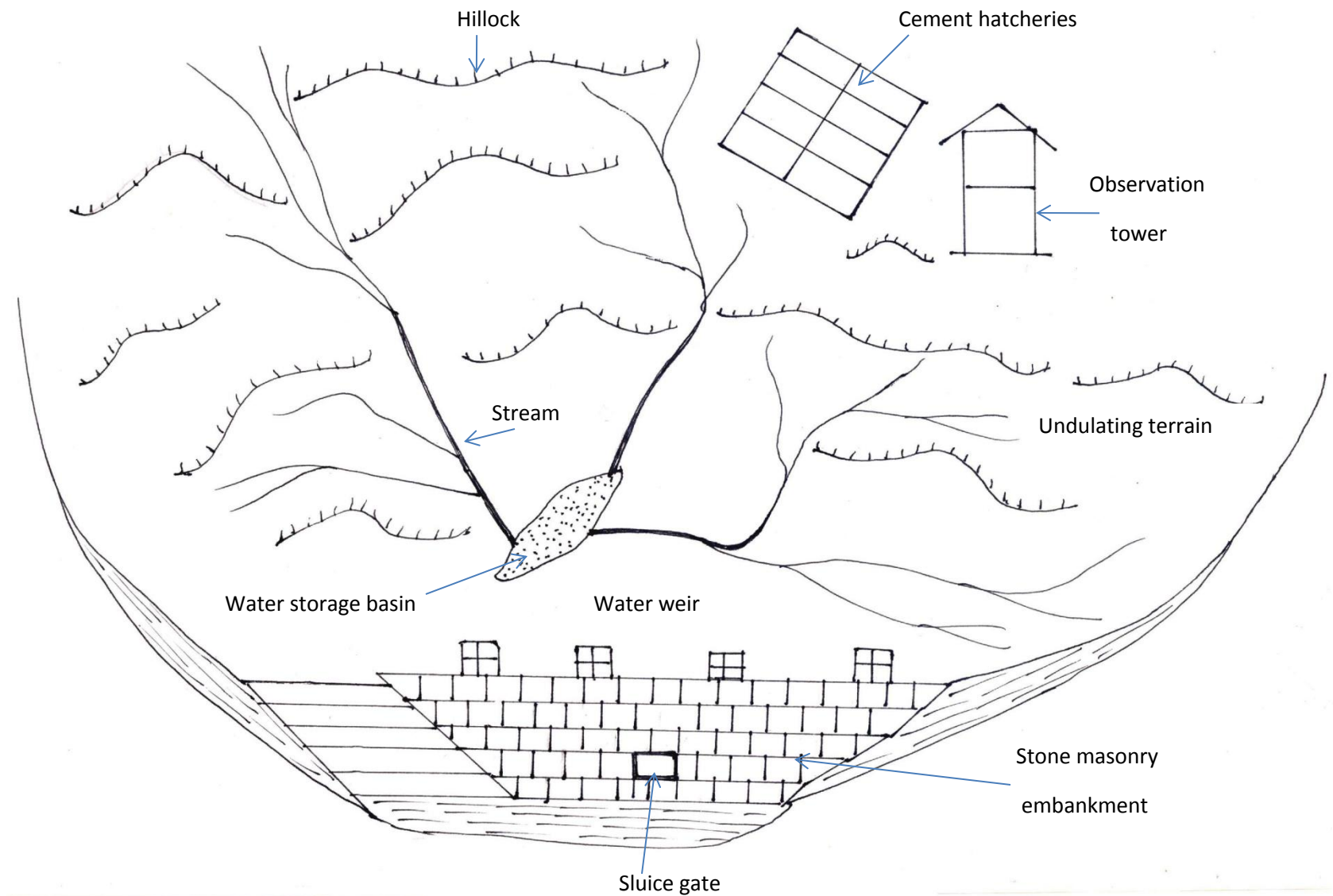
- The depth of water where breeding takes place has been stated to vary from 8 cm to 1.2 m
- Though the fish breeds at any spot in the bundh, it may be advantageous to prepare `spawning grounds' at different levels which could get flooded at different water levels in bundhs
- The bundhs can be filled with rain-water as and when desired and breeding operations undertaken without waiting for the bundh to fill afresh with rainwater



# Method of breeding carps in a wet bundh

## Dry bundh

- A typical dry bundh is a shallow, seasonal depression, having a bundh on one side and a catchment area on the other three sides
- May be of varying shape and size; made of earthen wall or masonry wall
- A dry bundh - smaller and shallower; wet bundh - bigger and deeper
- The bundh gets flooded in monsoon, but remains completely dry for a considerable period during a year
- It consists of a sluice gate for quickly draining the water and an outlet for the excess water to flow away
- In dry bundhs, spawning sometimes takes place in deeper areas



A typical dry bundh (Nowgong type) used for major carp breeding.

## Technique of breeding major carps in a dry bundh

- The mature carp breeders are introduced into the bundh at 1:2 (Female: Male)
- 10-20% of the fish is given intramuscular injection of pituitary extract or ready-to-use solution like ovaprim
- Water current is created in the bundh by drawing water from a store tank
- The following morning, the spent breeders are removed, eggs collected, water drained and the bundh dried for 2-3 days

- The bundh- utilized for the next breeding by releasing a fresh batch of breeders
- Five to six spawning conducted in each bundh during one season as opposed to only one spawning in a wet bundh
- Silver carp and grass carp have been successfully induced bred in bundhs without stripping
- Dry bundhs - one of the reliable means of mass breeding of Chinese carps to meet the increasing demand of their seed

## Collection and hatching of eggs

- After spawning, the eggs are collected from bundhs, after lowering the water level, by dragging a piece of mosquito netting cloth (*gamcha*) and released for hatching
- The hatching pits (448 cm x 244 cm x 46 cm) are excavated on the bank with arrangement for the supply of water. Each pit may contain about 0.9 to 2.2 million eggs, of which 2.5-25% hatch successfully
- A double-walled hapa (fixed in the bundh) consists of an outer hapa (182 cm x 91 cm x 91 cm) and an inner hapa (152 cm x 76 cm x 46 cm), accounts for a spawn survival rate of 32 to 50%

- The provision of cement hatcheries (2.4 m x 1.2 m x 0.3 m) near the dry bundhs in Madhya Pradesh has aided in improving the survival of hatchlings to 97%
- A cement hatchery of Madhya Pradesh – 3 times more capacity than a double-walled hapa and is more economical
- Since the collection of all the eggs is impossible, especially in the case of wet bundhs in view of their larger size, fry and fingerling collection is equally important

## **Factors responsible for breeding of fish in bundhs**

- Spawning may occur at night and during bright sun in the forenoon
- 2 to 3 males to one female is the usual ratio
- Mating occurs with vigorous splashing of water
- A thick blanket of eggs is left behind at the spawning site

- The spent fish in bundhs move to the deeper areas
- Heavy monsoon flood capable of inundating vast shallow areas is believed to be a primary factor responsible for spawning
- Some believe the availability of shallow spawning ground to be a deciding factor for spawning
- The rise in the level of water, naturally or artificially, is known to bring about spawning



- The temperature of water for spawning is found to be between 22 and 33°C
- Other factors like pH, high DO<sub>2</sub>, alkalinity, chloride and minerals do not seem to play any significant role in spawning
- Spawning is inhibited due to the presence of hormone-like secretion in captive waters
- Water that has flown through a dry bed of land rich in humus has stimulatory effect on spawning

