CHAPTER 1: INTRODUCTION

Aquaculture contributed 43 % of aquatic animal food for human consumption in 2007 (e.g. fish, crustaceans and molluscs, however excluding mammals, reptiles and aquatic plants) and is predicted to grow more to satisfy the long run demand. It's terribly diverse and, contrary to several perceptions, dominated by shellfish and herbivorous and omnivorous pond fish either entirely or part utilizing natural productivity. The rapid climb within the production of carnivorous species like salmon, shrimp and catfish has been driven by globalizing trade and favourable economics of larger scale intensive farming. Global aquaculture has grown dramatically over the past 50 years to around 52.5 million tonnes (68.3 million including aquatic plants) in 2008 worth US$98.5 billion (US$106 billion including aquatic plants) and accounting for around 50 per cent of the world's fish food supply. Asia dominates this production, accounting for 89 per cent by volume and 79 per cent by value, with China by far the largest producer (32.7 million tonnes in 2008).

In India, the annual fisheries and aquaculture production augmented from 0.75 million tonnes in 1950-51 to 9.6 million tonnes in 2013-2014. Globally the country currently takes the second position, after China, with respect to annual fisheries and aquaculture production (FAO, 2014). Specifically freshwater aquaculture experienced over a tenfold growth within the past three decades, 0.37 million tonnes in 1980 to 4.03 million tonnes in 2010. The freshwater aquaculture production in india includes about 2.36 million ha of ponds and tanks and accounts for nearly 55% of the entire fish production in india. Currently, solely an calculable 40% of the accessible area is in use due to technical and market access issues (FAO 2014).

Fisheries in india are a really vital economic activity and a flourishing sector with varied resources and potentials. Only after the Indian Independence, has fisheries along with agriculture been recognized as a very important sector. The resonance of the sector may be visualised by the 11–fold increase that india achieved in fish production in only six decades, i.e. from 0.75 million tonnes in 1950-51 to 9.6 million tonnes during 2012–13. This resulted in an unequaled average annual growth rate of over 4.5 % over the year that has placed the country on the forefront of worldwide fish production, only after China. Fresh water aquaculture showed an overwhelming ten-fold growth from 0.37 million tonnes in 1980 to 4.03 million tonnes in 2010; with a mean annual growth rate of over 6 %. Fresh water aquaculture contributes to over 95 % of the entire aquaculture production.

It's calculable that only concerning 40 % of the accessible area of 2.36 million hectares of ponds and tanks has been put to use and a huge scope for expansion of area exists underneath freshwater aquaculture (Handbook of Fisheries and aquaculture, 2013, ICAR publication, India). The national mean production levels from still-water ponds has gone up from concerning 600 kg/hectare/year in 1974 to over 2 900 kg/hectare/annum at this time and several farmers are even demonstrating higher production levels of 8–12 tonnes/hectare/year (Handbook of Fisheries and aquaculture, 2013, ICAR publication, India). Carp culture forms the backbone to freshwater aquaculture practice in India. Carp culture in India was restricted to as homestead backyard pond activity in West Bengal and Orissa till late 1950s, with seed from riverine sources as the only input leading to low level of production. Indian aquaculture, in general, is practiced with the use of low to moderate levels of inputs, particularly organic manures and feed. As of now, India utilizes only concerning 40 % of the available 2.36 million hectares of ponds and tanks for freshwater aquaculture and 13 % of a complete potential brackish water resource of 1.2 million hectares.

In freshwater aquaculture, West Bengal is among the front runner states of India where the average productivity (around 5 tonnes/ha/year) is significantly higher in comparison to the national average of 2.2 tonnes/ha/year.

As per 2011 Census data Puruliya is the western most District of the State. It comprises of 20 Community Development Blocks and 3 Statutory Towns. There are total 2667 Villages and 25 Census Towns in the District. Puruliya District occupies 16th position in terms of population. Puruliya District occupies 16th position in terms of Scheduled Caste population in the State. Puruliya District occupies 3rd position in terms of Scheduled Tribe population in the State. The decadal population growth rate of the District is 15.5% and much higher than the State average of 13.8%. The density of population (population per square km) of the District is 468 per square km which makes its rank rock-bottom in the State. The Sex Ratio of the District is 957 (No. of females per 1000 males) which is higher than the State's Sex Ratio (950) and it ranks 5th jointly with Bankura District in the State but it improves its rank (4th) slightly when only Rural Sex Ratio (960) is considered. In case of Scheduled Caste population it ranks Literacy Rate of the District is 64.5% (much lower than the State average of 76.3%) thereby making its rank 17th in the State. Puruliya District is following a decreasing trend in percentage of Main Workers to

Total Workers from 57.3 in 2001 Census to 49.1 in 2011 Census similar to trend in the State where the percentage 78.1 in 2001 Census dips into 73.9 in 2011 Census. Puruliya District stands 5th in terms of area (6259.00 sq km) in the State. Cultivators and Agricultural Labourers constitute the main work force of the District. They are 21.5% and 39.4% of the Total Workers respectively. There are 208 uninhabited Villages in the District.

The western districts like Purulia and Bankura with red laterite soil and primarily being rain fed have fallen behind the rate of growth in terms of productivity in this field.

Bankura District comprises of 22Community Development Blocks and 3 Statutory Towns. There are total 3,823Villages and 9 Census Towns in the District. Bankura District ranks 13th position in terms of Total Population in the State. Bankura District occupies 8th position in terms of Scheduled Caste Population in the State. Bankura District occupies 6th position in terms of Scheduled Tribe Population in the State. Bankura District ranks 12th in decadal Population growth rate among the Districts with 12.7%. The density of Population (Population per square km) of the District is 523 per square km which makes its rank 18th in the State. The Sex Ratio of the District is 957 (No. of females per 1000 males) which is much higher than the State's Sex Ratio (950) and it ranks 6th in the State and retains same position when only Rural Sex Ratio (956) is considered. Literacy rate of the District is 70.3% (higher than the State average of 76.3%) thereby making its rank 15th in the State. In Bankura District the percentage of Main Workers to Total Workers has dropped from 66.2 in 2001 Census to 62.5 in 2011 Census similar to the State where the percentage 78.1 in 2001 Census dips into 73.9 in 2011 Census.

But these two districts have large number of water bodies mainly in the form of reservoirs and pond and there is large scope of integration of fish culture with other husbandry practices. As total no of BPL families in rural areas of Purulia are 197381 (43.65 %) of which SC families are 40645 (20.59 %) and ST families are 47666 (24.15 %), there is immense scope of employment generation and economic upgradation through scientific fish farming. Literatures supporting the present status and prospects of fish farming, limiting factors of productivity enhancement, level of modernization of fish farming practices through the adoption of modern technologies, prospective areas of integration and its economic level of these two districts are severely lacking. With this view the present programme of study is being proposed with the following objectives.