INTRODUCTION

"SOME HYDROBIOLOGICAL STUDIES ON A SUB TROPICAL TANK, MOTITALAV AT SAWANTWADI "

I INTRODUCTION:

All developing countries in the world are facing shortage of food supply to support the ever increasing demand bygrowing populations. According to the report of FAO (1962) the diet of the populations of these countries is insufficient and nutritionally unbalanced in which animal protein dfficiency is a serious dietary lack. As the proteins from vegetables do not have all the essential amino acids required for human growth, proteins of animal origin becomes essential. Due to the present day inflation the conventional sources of animal proteins available in the form of milk, meat,pork, poultry, egg etc. are beyond the means of the common man. Therefore perhaps the only alternative is fish protein which is not only a complete protein but is easier to digest and comparatively chaaper.

In India we have great domain of fresh water and in the fight against hunger and malnutrition, harvesting of this water domain and increasing the fish production therefore becomes a must.

There are vast masses of impounded waters existing in our country and every year there is an addition of

hundreds of hacter of new water mass in the form of water supply tanks, irrigation and flood control reservoirs etc. According to Bhimachar (1975) 'No development programme has effectively been initiated in all these perenial and seasonal tanks at present, except that fisherman take out from these tanks whatever weed fish that may be naturally stocked during the mansoon floods when the tanks overflow. There is an immense scope for stepping up fish production in these tanks if suitable measures are undertaken.'

In order to utilize a fresh water body successfully for fish production it is very important to study the biotic and abiotic forces influencing the biological productivity of the said water body. Research in this field is no doubt of indirect assistance, but it will serve as a guide line to sence maximum use of the productivity of water and if necessary to introduce exotice fish species to complete the ecological pattern of the water body.

Such investigations in attempting to estimate the productivity of any water body involves maping the shape and depths of the water body (Surface area and sub-surface configurations), observations on the physical factors like tempreature, turbidity, light penetration, colour of water chemical factors like pH, dissolved oxygen, free carbon dioxide , hardness of water and important nutrients like phosphates and nitrates and effect of pollution if any.

In biological investigation study of micro and macro flora and fauna always provides the clear picture of the

ecological relationships existing in the water body.

Such a study, based on ecological appraisal, can shed light on the effects of the variations in the various factors on the biotic community, the interrelationships amongst the organisms, the prey predator relationship and the consequent food chain.

The present study on the hydrobiology of one of the thousands of such water bodies in India, namely Motitalav, Sawantwadi therefore was undertaken mainly to study the important physical, chemical and biological factors influencing the tank.

According to Jhingran (1975), the total man made reservoir area in India today is about 1,094,960,616 ha. out of which 40 % is formed by small reservoirs and tanks. This area does not include the area occupied by rivers, natural lakes etc.

In Maharashtra State out of the 151,114,710 ha. area of total fresh water bodies about 89 % area is constituted by small reservoirs and tanks like Motitalav. Such small and shallower fresh water bodies have been found to be much more productive than large impoundments (Holt, 1966). Therefore the real prospect of future increase in fish production appears to lie in the exploitation of these small water bodies where the factors involved in the productions of fish can be properly controlled.

Several research workers all over the world have made contributions on hydrobiology on large natural lakes and man made reservors of North America, Canada and Europe in temperate climatic conditions.

Some of the workers from abroad who have studied various aspects of the hydrobiological conditions in fresh waters are, Juday et al (1932) ,Ricken (1937) ,Brett (1950), Smith (1952,61) , Wright (1954), Hutchinson (1957), Weiss and Oglisky (1960), Rodgens and Anderson (1961), Beeton (1963),Spannow (1966), Fish (1969,75), Fish and Chapman (1969), Fccles (1974), Dutchie and Ostrofsky (1974), Green (1975), O,Connell and Carten (1976), and Candan et. al.(1976) etc.But very little work seems to have been done on the tropical and sub-tropical water bodies and this work is mainly restricted to deep and large natural lakes and gigantic man made reservoirs.

In India workers like chackes (1949-54) Ganapati (1940,56) ,Krishnamurthi (1965), Michael (1968) and Vijayaraghavan (1971,73) have done some hydrobiological work on historic shallow water bodies like moats,temple tanks and village ponds in south india. A few like David et al (1969), Krishnamurthi (1971), Jhingran (1963) have worked on the large brackish water lakes and reservoirs. But except for the splendid work of Shree nivasan (1962-72) on the productivity of tropical waters of Tamilniadu, no extensive efforts seem to have been made to study and

correlate the various hydrobiological factors in any small and shallow water body from subtropical conditions like ' Motitalav ' Sawantwadi.

When Motitalav was selected for the limnological investigations following points were given special emphesis.

1. The tank represents number of such fresh water of bodies from the Konkan area. No scientific information of any kind is available about them.

2. Most of the water bodies are perennial but still very little use of the water is made by the local population, except washing of cattle and cloaths and occassionally for irrigation.

3. Due to the traditional food habits and beliefs of the local people about the poor taste of fresh water fish, inspite of the tremendous fish culture potential of these tanks the water bodies are not utilised for fish production.

4. Motitalav being situated at the heart of the city of Sawantwadi, has a considerable amount of influx of nutrients through city drainage system. The tank is much shallow (mean depth 6 ft.) and therefore has good penetration of light resulting in rich algal growth which can be seen from the green colour of the surface water. Also the tank is located in comparatively

low area and is nearer to the sea (12-13 miles). This was expected to give different results than seen in the fresh water bodies from high altitude in Maharashtra.

An attempt was therefore made to study some of the important physical and chemical parameters of influencing the biological productivity of the water body. And if possible to estimate, by studying the phyto and Zooplankton qualitatively and quantitatively to see what type of exotic fishes can be introduced in the tank in future so as to utilize the water body successfully for fish production.